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FIVE CASES OF SPONTANEOUS RUPTURE OF THE HEART*

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INTRODUCTION

THE increasing interest in coronary diseases during recent years has led to a better understanding of one of its most dramatic complications, spontaneous rupture of the heart. By reason of the tragic nature of the clinical picture and the interest attached to the post-mortem findings the condition has been the subject of frequent report. The most important of the early contributions to our knowledge of the subject is the thesis by Elleaume (*Essai sur les ruptures du coeur*, 42 p.p. 8°, Paris 1857). Since this paper various comprehensive studies have been made including Quain (*Med. Chir. Trans.* London, 1871, 33, 121), Barth (*Arch. gen. de Med.*, 1871, 65), Robin and Niccoli (*De la Rupture du Coeur*, 152 p.p., Ruff & Cie, Paris, 1895), Houchard (*Maladies de Coeur*, 1899, 1, p. 228), Minet and LeClereq (*Clinique*, Paris, 1910, v, 273), Wearn (on coronary disease) (*Am. Jour. Med. Sc.*, 1923, clxv, 250), and Krumbhaar and Crowell (*Am. Jour. Med. Sc.*, 1925, clxx, 828). The last mentioned authors report 22 personal cases and have assembled 632 cases from the literature. In spite of this large series of published cases, however, the condition must be considered as a very rare one. Krumbhaar and Crowell give figures showing an incidence of only 23 cases among 37,000 autopsies. At the Massachusetts General Hospital there was 1 case in 4,076 autopsies and at the Boston City Hospital 5 cases in 5800 autopsies. The combined figures show but 29 cases in 46,876 necropsies, or six one-hundredths of one per cent.

The five cases observed at the Boston City Hospital are summarized below.

CASE 1. Man of 61. Excellent general health. Never any serious illness. Nocturia (2-3) for past two years. Frequent severe pain in small of back for several years. No cardiac symptoms until past 2 or 3 months when he has had severe attacks about once each week of sudden intense dyspnoea, palpitation, weakness, vertigo, pallor, numbness in hands and great distress in epigastrium. They usually follow exertion and last approximately five minutes. Their severity has gradually increased. Physical examination showed moderate cyanosis, rapid respira-

tion, evident dyspnoea, and signs of double hydrothorax. Pulse elevated, equal, regular, fair volume and tension. Peripheral arteries stiff and tortuous. Heart moderately increased in lateral area of dullness, action regular, sounds fairly clear and normal, fair volume and tension; occasional reduplication of first sound at the apex. No murmurs. No oedema. Abdomen negative. The day after entrance the patient seemed more comfortable but on the following day had a sudden attack of intense dyspnoea with great precordial distress and became deeply cyanosed. Moderate relief from opiates. At the end of 1 or 2 hours a second attack, with death following almost instantaneously.

Autopsy No. 02-83. Each pleural cavity contains 1500 cc. of clear straw colored fluid. Pleural surfaces normal. Pericardial cavity contains bloody serum and a currant jelly clot which presents as an envelope to the heart. The clot peels readily from the epicardium, revealing on the anterior aspect of the left ventricle about one half way down and within a centimeter of interventricular septum, two ruptures. These ruptures are slit like, 4 to 5 mm. in length, 1 to 2 mm. broad. The ruptures contain clotted blood and on gentle pressure no fluid escapes from them. Heart wt. 540 gms. Measurement of valve orifices: tricuspid 13 cm., pulmonary 8.5 cm., mitral 12 cm., aortic 9 cm., left ventricle wall 2 cm., right ventricle wall .6 cm. Tricuspid, pulmonary and mitral valves normal. Slight diffuse thickening of the aortic cusps and some calcification at the insertion of the mitral valve. The wall of the left ventricle in the region of distribution of the anterior descending coronary is considerably thinned, presenting a marked concavity towards the ventricle and some outward bulging. The endocardium in this region is overlaid by considerable granular clot. On section of the heart wall in this region, it is found to be made up of pale, opaque, striated tissue alternating with lenticular areas of clotted blood. Such lenticular areas communicate with the ruptures described on the surface of the heart and the clotted blood in the ventricles. The coronary artery supplying this region of the heart wall shows marked thickening of its wall and at one point, 2 cm. from the auricular ventricular groove, a roughened area to which a thrombus is adherent. At this point the lumen of the artery is completely occluded. This occlusion lies just outside of the ischaemic area of the myocardium. Elsewhere the wall of the left ventricle is considerably hypertrophied. The other coronary arteries show marked sclerosis but are nowhere occluded.

Anatomical Diagnoses. Hemopericardium. Thrombosis of left descending coronary with infarction and rupture of the heart. Mural thrombosis. Coronary sclerosis. Chronic aortic endocarditis. Hypertrophy of left ventricle. General arteriosclerosis. Hydrothorax (double). Edema of the lungs. Cholelithiasis. Chronic diffuse nephritis. Chronic interstitial orchitis.

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Microscopic Examination. Heart. Scattered through the section are small islands of myocardium. The muscle fibers show various degrees of degeneration. One island seems to be one of the columnae carneae. This consists of a central area of comparatively normal muscle fibers surrounded by a narrow zone in which the fibers are in part degenerated and in part replaced by fat. The whole area is surrounded almost completely by a layer of fibrous tissue. The remaining portion of the section is made up of blood clot in which the fibrin network figures prominently. In some places the polynuclear leucocytes are present in large numbers.

CASE 2. Man of 72. Carpenter, who for two years has had rather severe attacks of precordial pain radiating to the shoulder and down the left arm. These attacks are brought on by any form of exertion but especially by walking. The present attack began at 11 o'clock in the morning while walking when he had an attack of pain of great intensity in the region of the precordium which radiated to the middle of the back and down both arms. He perspired freely and was exceedingly weak but had no dyspnoea or respiratory symptoms. On examination when admitted to the hospital the patient was evidently in great agony from precordial pain. The heart area and position seemed normal but the sounds were very weak and intermittent. No definite murmurs detected. In spite of the weak heart sounds the pulse seemed to be of high tension. After a few hours the patient's pain was relieved and he seemed very comfortable for twenty-four hours except for fairly frequent vomiting and some pain and tenderness in the epigastrium. On the second day the patient did not seem so well and during the afternoon, while in a sitting posture talking to his wife, was seized with a sharp pain in the mid chest and radiating down the arms. He fell back on the pillows dying instantly.

Autopsy No. 06-166. Entire outer surface of right lung bound to chest wall by old soft stringy adhesions. The pericardial cavity is distended with over 300 cc. of fluid and clotted blood. Surfaces smooth and glistening. A visible line of rupture in left ventricle reveals source of bloody effusion. Heart wt. 320 gms. Epicardium well laden with fat. Muscle is soft and flabby. On surface of left ventricle 7 cm. from apex and 4 cm. to left of upper margin of right ventricle is a nearly vertical line of rupture 2 cm. in length. Edges are well approximated, but on separation are distinctly ragged in outline. On section this rupture is seen to communicate directly with cavity of left ventricle. A ragged vertical line of rupture 5 cm. in length is situated behind and between leaflets of mitral valve and 1 cm. below mitral ring. On section muscle at this point is soft, pinkish grey in color, and easily fragmented. Remaining muscle is quite soft and flabby. Aortic leaflets are slightly retracted and bases contain calcified plates with numerous small raised yellowish areas. Remaining valves are normal. Each coronary contains numerous irregular yellowish raised calcified plaques. These are more marked in the upper third in places nearly occluding arteries and involve the orifices of the branches especially those leading toward the point of rupture. Measurements of valve orifices: tricuspid 11 cm., pulmonary 7.5 cm., mitral 9.5 cm., aortic 7 cm., left ventricle wall 1.7 cm., right ventricle wall .4 cm.

Anatomical Diagnoses. Spontaneous rupture left ventricle with hemopericardium. Advanced arteriosclerosis, involving coronaries. Myocarditis. Healed tuberculosis both apices. Fibrous pleuritis.

Microscopic Examination. Heart. Several areas show extensive necrosis of muscle fibers with heavy infiltration of polymorphonuclear leucocytes. Cultures of heart's blood: no growth.

CASE 3. Man of 75. Only very meagre history obtained. Chancere at 16, gonorrheal infection at 18. Apparently a rather prolonged history of dyspnoea and cough. Patient states that he was perfectly well until three months before admission when he caught cold, since which time he has had a cough and pains in his left shoulder and at times throughout the thorax. During this period dyspnoea with slight exertion has been rather extreme. He has also had a good deal of intermittent pain in the upper right abdomen. On examination there is evidence of extreme arteriosclerosis. The heart does not seem enlarged and the apex beat is neither seen nor felt. Regular rhythm. No murmurs. Sounds rather faint. Patient seemed very comfortable in the hospital but on the third day without warning died instantly.

Autopsy No. 21-11. The peritoneal cavity contains about 500 cc. of amber colored fluid. Many firm adhesions binding the liver to all adjacent structures. The left pleural cavity contains about 1000 cc. of straw colored fluid, with several adhesions at the apex. Right pleural cavity obliterated, and both layers of pleura have been very intimately glued together by adhesions. The pericardium is tensely stretched by dark red blood in the midst of which are several large clots. Over the anterior surface of the apex for an area about 4 cm. in diameter the pericardium, which is thickened to 4 mm. in this location, is so firmly adherent to the heart that it cannot be detached. Heart wt. 505 gms. Larger than normal, soft and flabby. Apparently there has been a primary hypertrophy followed by thinning out of the lower two thirds of the left ventricular wall, with rupture of this wall as cause of sudden death. The ventricular wall below the mitral valve is 1.6 cm. thick; it gradually thins out toward the apex where it is only 2 to 3 mm. thick. A firm brown clot up to 1.3 cm. in thickness lines the lower portion of the ventricular cavity; it is an old clot and is detached with difficulty. Two perforations present themselves in this aneurysmal wall, one irregular in outline and large enough to admit the index finger, the other a linear rupture about 1 cm. in length. Valves are negative except the aortic, two of whose leaflets have numerous, small, hard, stony, pale yellow vegetations; the aortic orifice is coincidentally stenosed. Coronaries are sclerosed, the walls of vessels feeding the left ventricular wall are thick, yellow and the vessel stands out rigidly with its lumen practically occluded. Measurements of valve orifices: tricuspid 13.1 cm., pulmonary 8 cm., mitral 11.3 cm., aortic 6 cm., left ventricle wall variable, right ventricle wall .6 cm.

Anatomical Diagnoses. Aneurism of left ventricular wall with rupture. Healed aortic valvulitis with stenosis. Hemopericardium. Healed pericarditis. Healed obliterative pleurisy (right). Pleurisy with effusion (left). Edema and congestion of lung (right). Chronic bronchitis. Chronic passive congestion. Healed peri-hepatitis. Ascites. Healed tubercles of spleen. Chronic diffuse nephritis (arteriosclerotic). Simple cyst of kidney (left). Healed infarcts of kidney (right). Arteriosclerosis.

Microscopic Examination. Heart. Considerable interstitial sclerosis of the heart with pigment in the muscle cells. One slide shows epicardium with large amount of fat, and wall of left ventricle with adherent organizing thrombus. The aneurysmal wall consists of connective tissue, fibroblasts, occasional cardiac muscle bundles, many small blood vessels with more or less diffuse infiltration of erythrocytes, polymorphonuclear leucocytes, many endothelial leucocytes laden with blood pigment, lymphocytes and a moderate amount of fibrin. The fibroblasts are growing into the blood clot on the endocardial wall.

CASE 4. A man of 74 was brought to the hospital

in an unconscious condition having collapsed on an elevated train. He soon regained consciousness and seemed fairly rational but with very feeble memory. Story obtained that for at least two years he has been very short of breath and has had considerable number of attacks of syncope of very short duration. At entrance the patient was cyanosed, pulseless, and no heart sounds could be heard. With stimulation temporary improvement resulted but later in the day the patient became very restless and evidently suffered intensely from cardiac distress. Death followed at the end of a few hours.

Autopsy No. 70-21. There is 100 cc. of clear straw colored fluid in the peritoneal cavity. Firm fibrous bands unite the two layers of the right pleura. The pericardial cavity contains 75 cc. of fluid blood. About the heart there is a layer of clotted blood which anteriorly measures about 1.5 cm. and posteriorly about 2.5 cm. in thickness; not adherent to the heart. Over the left ventricle there is a small slit in the pericardial cavity. Heart wt. 400 gms. In the left ventricle, 4.5 cm. from the interventricular septum, there is a slit through the pericardium and the myocardium connecting the left ventricle and the pericardial cavity. This slit measures 1.5 cm. in length and 3 mm. in breadth and runs downward in the direction of the apex. There is a loose blood clot within the left ventricle which extends into this opening for a short distance. On section for 2 to 3 cm. about this rupture in the heart wall, the myocardium shows marked evidence of degeneration. Just adjacent to the rupture its color is light red and it is quite soft. Beyond this point its color has a distinct yellowish tint and it is much softer than normal. Coronaries are thickened in places. The branch passing downward in the direction of the rupture shows several thickened areas, one of which almost completely occludes the vessel. Measurement of the valve orifices: tricuspid 12.5 cm., pulmonary 6.5 cm., mitral 9 cm., aortic 7.5 cm., left ventricle wall 1.7 cm.

Anatomical Diagnoses. Rupture of the heart. Hemopericardium. Softening of the myocardium. Myocarditis. Chronic nephritis. General arteriosclerosis. Hypertrophy of the heart. Congestion and edema of the lungs. Chronic passive congestion of the liver and spleen. Chronic adhesive pleurisy. Right hydrocele. Chronic adhesive pericarditis. Edema of the brain. Arteriosclerosis of the Circle of Willis.

Microscopic Examination. Heart. Irregularly distributed areas of varying size show numerous fine fat droplets throughout the myocardium. In places these fine drops are so closely packed that the striation of the muscle cannot be seen. In the area of rupture there is quite marked fatty infiltration of muscle, interstitial leucocytic infiltration and intramyocardial leucocytic infiltration. In both positions there is marked fatty infiltration of the leucocytes. The amount of the individual muscle fiber which has been infiltrated with polymorphonuclear leucocytes varies from a small area to most of the fiber. Cultures of heart's blood: sterile.

CASE 5. Man of 60. Engineer. Previous health excellent. Entered the hospital with a story of shortness of breath with exertion of rather sudden onset one week previously. Constant sensation of being choked. Examination showed heart very much increased in lateral diameter, sounds regular but rather weak, soft systolic murmur with maximum at the apex. Patient's general appearance and symptoms did not indicate that he was critically ill. During the first day seemed very comfortable. Had a good night and awoke in morning feeling in good condition. About 8.45 A. M., however, while sitting quietly in bed suddenly collapsed, became cyanosed and died within a few seconds.

Autopsy No. 07-151. Pericardial cavity consider-

ably larger than normal. Fluctuation on palpation. It contains a large blood clot, thickest in dependent part and 300 cc. fluid blood. A clot completely surrounds the heart but is nowhere adherent to pericardium. A slit entirely through the left ventricle connects the pericardial cavity and left ventricle. Heart wt. 450 gms. There is a slit in the lower portion of the left ventricle 2 cm. from the interventricular septum. This slit is situated posteriorly, measures 4 cm. in length and contains a clot which connects with the clot in the pericardium and left ventricle. About the rupture the myocardium is of dark color and softer than myocardium elsewhere. The remainder of the myocardium, most marked throughout the left ventricle, shows quite numerous, fairly well outlined, yellowish areas. As a whole the myocardium is softer than normal. The endocardium is smooth and glistening, save about the bases of the aortic valves, where there is some thickening. The coronaries show considerable sclerosis, most marked in localized areas. The coronary passing toward the region of the rupture is at one point almost occluded by a small, calcareous area. Measurement of valves normal. Thickness of left ventricle 2 to 2.5 cm., right ventricle .7 cm.

Anatomical Diagnoses. Hemopericardium with rupture of heart. Hypertrophy of heart. Fatty heart. General arteriosclerosis and of basal vessels. Chronic nephritis. Subpial edema. Hypertrophy of prostate.

Microscopic Examination. Heart. Shows irregular areas with fat in fine drops, which vary in amount within the myocardium. Most marked in and immediately about areas of sclerosis. Some connective tissue cells in sclerotic areas show fat drops. Phagocytic rather than degenerative process. Atrophy of muscle fibers. Increase of lipochrome. Aorta. Marked fatty change, mostly in the thickened intima. Areas of diffuse fatty infiltration and areas of fat in very fine drops. Latter most marked in the innermost layers of the adventitia. Cultures of pericardial blood sterile.

SYMPTOMS AND COURSE

The clinical picture of this condition though in some respects extremely uniform in type is not sufficiently unique and characteristic to warrant a sharp differentiation from several other cardiac emergencies and especially coronary disease. Indeed, strictly speaking, the symptoms of spontaneous rupture of the heart in a vast majority of cases are those of occlusion of the coronary arteries with infarction, the former being merely the final stage in the cardiac failure. An individual with myocardial disease suddenly succumbs without the development of new symptoms and at necropsy a rupture of the heart wall is found. This is strikingly true of each of the five cases given above. In cases 1 and 2 death occurred suddenly in the course of a typical attack of angina pectoris to which the patient had been subject. The three remaining cases presented a typical picture of severe coronary sclerosis without angina. In each there was sudden collapse and death; cases 3 and 5 dying instantly, case 4 only after an interval of a few hours.

In a considerable number of the published cases there have been no very definite symptoms of cardiac disease until the final attack with immediate death. The usual picture in such

cases is that of very great precordial distress, intense dyspnoea, cyanosis, collapse and death with no preliminary or warning symptoms of the cardiac accident. In the general run of cases, on the other hand, the terminal attack follows only after a shorter or longer period of intermittent coronary symptoms such as those noted in the cases forming the basis of this paper.

The true symptoms of rupture then may be regarded as those occurring with the terminal attack and these present a fairly uniform complex. The onset is very abrupt and almost invariably with pain in some form as the outstanding feature. Without warning the victim is seized with an overwhelming pain in the region of the heart which may or may not radiate to the back or shoulders and arms. Less commonly it is localized in the epigastrium. Its type is variously described as "tearing," "boring," "great pressure," etc. The agony evidenced by these cases is of a very extreme type. The next most frequent and outstanding symptom is dyspnoea which is almost always of an extreme grade and often associated with a choking sensation. Cyanosis is usual, often intense. Nausea and vomiting may be present. Pallor, vertigo, cold sweats, vomiting, diarrhoea and faintness often form a part of the picture of collapse. In a few instances severe convulsions have been observed. Oedema of the lungs may develop. Fever and leucocytosis very frequently appear if the patient survives the initial attack. Rebattu and Jossierand (*Lyon Med.*, 1923, cxxxii, 41) report a case which is quite unique in that the patient died instantly without symptoms of any kind. At necropsy a large jagged hole in the anterior wall of the left ventricle was found giving the impression that the infarct had literally dropped out.

Physical signs are primarily those of collapse as described above. Death supervenes so quickly in most cases that there is no opportunity for a careful study of the heart. In the few cases where an examination was made the signs do not seem to have been exceptional in any way. The heart may or may not be enlarged, the action is rapid and tumultuous, often with irregular rhythm, and sounds of poor quality. Reznikoff (*Jour. Am. Med. Assn.*, 1922, lxxviii, 1926) reports a case with rupture of the left ventricle in whom on auscultation just before death "a continuous, muffled, low pitched rushing rumble" was heard over the precordium. The signs of hydropericardium have been described but it is difficult to conceive of such a picture ordinarily since death occurs simultaneously with the filling of the pericardium. Furthermore, the amount of blood usually found in the sac is not sufficient to give very striking signs of pericardial effusion.

Clinical Course. Sufficient has been said above to indicate that as a rule death occurs within a few seconds following the onset of the

first symptoms. Krumbhaar and Crowell found this to be true in 72 per cent. of all recorded cases, while in another 7.7 per cent. exitus was delayed only ten minutes. In the remaining 20 per cent. of cases the interval was from ten minutes to several days. The onset and the intensity of the symptoms in this last mentioned group are the same but instead of collapse and death the patient gradually improves, to be stricken again with immediately fatal results. Case 4 furnishes an excellent example of this type. The patient was brought to the hospital in collapse and lived several hours after entrance, then dying very suddenly in an attack with precordial pain. It must be admitted that in this last mentioned type of case we have no proof that rupture develops with the onset of the early symptoms. Precisely such a course is characteristic of coronary thrombosis without rupture of the myocardium. In many instances of this condition death is also instantaneous while in others there is a varying interval between the onset of symptoms and death. The mode of death is likewise the same both as regards the symptoms observed and their severity.

PATHOLOGY AND ETIOLOGY

Peculiar interest attaches to the discussion of the pathology of this condition for the reason that a necropsy has been done on all published cases. It is unfortunate, however, that so few of the early cases were studied microscopically and that so many of the case reports are very incomplete.

In a previous article by the author (*Medical Clinics of North America*, Phil., 1925, viii, 1669) the figures with regard to location of the rupture in 259 published cases were given. This group of cases showed 79.9 per cent. of the lesions in the left and 10.1 per cent. in the right ventricle, figures which are almost identical with those of Krumbhaar and Crowell for their larger group of 64 cases. The remaining 10 per cent. are about equally distributed between the auricles and other miscellaneous locations in the heart. The inter-ventricular septum is occasionally the site of rupture. Among the 80 per cent. of cases with rupture in the left ventricle nearly all occurred in the anterior wall, the favorite site in order of frequency being the lower, the middle and the upper third. At whatever level of the ventricular wall, the tear is apt to be near the inter-ventricular ridge. In all five cases reported in this paper the opening was in the anterior wall of the left ventricle. Only a few instances are recorded of rupture in the posterior wall of the left ventricle. The overwhelming frequency of the lesion in the anterior wall of this heart chamber is readily explained by the great prevalence of sclerotic changes in the descending branch of the left coronary artery with resulting occlusion and infarcts of the lower anterior two-thirds of the left ventricle.

The tear is almost invariably single although there are a few instances of multiple openings as in cases 1 and 3 of our series, in each of which there were two openings into the pericardium. The character of the tear in the heart muscle is of quite varied form but usually of a linear type varying in length up to a maximum of 7 or 8 cm. and in width seldom more than a few mm. It is most often closed tightly but the edges may be separated and plugged firmly by a clot. Occasionally the opening is very clean cut as if done with a sharp knife, at other times it is irregular, jagged, angular or even radiate. A few specimens have shown simply a ragged hole in the ventricle wall. Observations have frequently been made that the external opening is considerably larger than the inner which may be very small and hidden among the papillary muscles. The course of the canal through the ventricle wall is sometimes direct but more often very irregular as in the common zig-zag type.

The outward appearances and condition of the pericardial sac are constant except for slight variations. It is greatly distended, tense, fluctuant, and of a dull, congested color. These appearances are due to the presence of blood clots and sero-sanguinous fluid to the amount of a few hundred cubic centimeters. A larger quantity of blood is not generally found due, it would seem, to the fact that the normal pericardial sac is very resistant to sudden distention. A very striking exception to this rule is to be found in Sturrock's unique case (*Brit. Med. Jour.*, London, 1906, i, 500) where notwithstanding the fact that death occurred in four minutes after the onset of symptoms, the pericardium contained 29 ounces of clotted and fluid blood. Very commonly the heart is entirely encased in a continuous clot to which it may be in part densely adherent. Since death follows so quickly changes in the pericardium are insignificant.

The heart muscle presents at the same time the most interesting and significant changes. Unfortunately many of the autopsy reports are so meagre in their description of the condition of the myocardium as to be of little or no value. In a very large number of cases, for example, the condition of the coronaries is not even recorded. A careful study of the reports regarding the morbid anatomy of the condition under consideration therefore is disappointing because of the inconclusive evidence which it yields. There are still some unsettled questions of very vital moment regarding the pathogenesis. In the main, however, the changes in the heart muscle which are characteristic of the disease can be quite definitely described.

In his classic treatise entitled "On Fatty Diseases of the Heart," referred to earlier, Quain discusses with considerable thoroughness the symptomatology and pathogenesis of spontaneous rupture of the heart. He lays the greatest

stress on fatty degeneration of the myocardium as did many of the early writers on the subject, largely overlooking the role played by disease of the coronary arteries. Judgment regarding the condition of the heart muscle was formed by these older writers largely from the gross appearances rather than from careful histological examination as has been brought out by Krumbhaar and Crowell. In 30 per cent. of the cases tabulated by these authors the cause of the rupture was attributed to "fatty" degeneration and infiltration." It appears very significant that in the pathological reports of recent years the description of such alterations in the heart muscle as fatty degeneration have been given very little prominence, the condition being regarded merely as one form of muscle degeneration resulting from coronary sclerosis with occlusions. These changes are apt to be especially evident just beneath the epicardium.

In accordance with v. Jürgensen's law, spontaneous rupture occurs only in the severely diseased muscle. Most commonly the lesion is in the centre of an area of infarction. The area comprising the infarct is of dark color, soft and on histological examination found to show the type of degeneration common to local anemia and actual necrosis if the occlusion is complete. The altered tissue is often intensely haemorrhagic suggesting that the blood has been forced into the softened area as in a dissecting aneurism. In this severe type rupture is apt to occur early and with immediate death. Such a condition is shown in case 1 where thrombosis of the descending branch of the left coronary artery has led to a typical infarct and rupture in the middle anterior part of the left ventricle near the septum. In this case the heart muscle is pale, somewhat opaque, soft and with areas of clotted blood. Microscopically the muscle fibers show various degrees of degeneration with a large amount of fatty infiltration. The central portion of the infarct is composed of blood clot with a rich fibrin net work. Polynuclear leucocyte infiltration is extensive.

If rupture does not take place early or if the occlusion of the coronary artery is incomplete or slow in development a somewhat different condition is produced, namely, a greater degree of general fibrosis with atrophy of the muscle fibers. It is this form which occasionally goes on to the formation of aneurismal dilatation and as a final stage sometimes to perforation also. An excellent example of this is found in case 3, in which the lower two-thirds of the left ventricle is thinned to barely 2 or 3 mm. and takes on the form of a definite aneurism in the center of which are two perforations. The coronaries are sclerosed, the lumen of the vessel supplying the left ventricle being almost occluded. The microscopic examination of the aneurismal wall shows mainly connective tissue diffusely infiltrated with erythrocytes, polymorphonuclear and endothelial leucocytes. Many fibroblasts and small

blood vessels are present but only an occasional muscle bundle. Cases 2, 4 and 5 seem to be intermediate between the condition of true infarct with rupture in an early stage (case 1) and the slow fibrosis with aneurism and final rupture (case 3). The coronaries in all three show extensive sclerosis with almost complete occlusion of the lumen of the descending branch of the left and moderately extensive myocardial degeneration of the wall of the left ventricle but no infarct. The degree and extent of degenerative changes in cases 2 and 5, however, are much less than in case 1 and show but little fibrosis as compared with case 3. The gross changes in case 4 are the same as cases 2 and 5 but are much more extensive and striking. Degeneration, fatty infiltration, and leucocytic infiltration both interstitial and intra-myocardial are very marked.

Whether the process is an acute myomalacia from sudden and complete coronary occlusion or a more slowly developing process of fibrosis and degeneration from less abrupt interruption of the blood supply to the heart muscle, the result is the same, namely, a much weakened heart wall over a localized area. The diseased muscle is usually found to be surrounded by relatively healthy muscle which furnishes ideal conditions for rupture of the heart wall during systole. With but few exceptions the heart shows some degree of hypertrophy. In the cases forming the basis of this paper the hearts weighed respectively 540, 320, 505, 400 and 450 grams.

While there seems every reason to assume that in a vast majority of cases the pathogenesis of spontaneous heart rupture is as given above, it must be admitted that in a very small percentage of cases other conditions may lead to rupture of the heart wall. The most important of these are syphilitic invasion of the myocardium, infectious myocarditis, embolic abscess of the heart wall, and ulcerative endocarditis with invasion of the myocardium. Tuberculosis, tumors and cysts are less frequent causes. A very striking fact is the considerable number of aged insane among the reported cases of rupture but its significance is not clear.

Certain so-called secondary causes merit passing consideration since they appear very definitely to play some part, though a minor one, in the production of the rupture in a portion of the cases. It would be natural to consider such factors as any extreme physical exertion as favoring rupture through sudden and powerful contraction of the heart. Indeed, a significant association between rupture and such severe efforts as carrying heavy burdens, intense exertion, violent laughing or coughing, convulsions, vomiting, difficult defecation, coitus, etc., seems to have been shown in many cases. Probably great excitement and intense emotional upsets should also be included in the same category.

Minet and Leclercq lay great stress on the part which these "determining causes" play in the actual production of rupture. On the other hand, in a much larger percentage rupture has not occurred following a sudden increase in intracardiac pressure but while the patient was lying absolutely quiet in bed. This was true of all five of our cases. A considerable number have actually died during sleep.

In the main, the mechanism of cardiac rupture is fully explained on the basis of the foregoing consideration. The exact relation of symptoms to the stage of the process, however, is less clear and it may well be that no close correlation is possible. It seems evident that if the tear is complete and of sufficient size death must follow almost instantly. What happens in those cases where death follows only after a varying interval of hours or days? It is conceivable that an incomplete or very small break in the muscle wall might permit a very small leak only and death be postponed for a short time. It is rather generally contended that the first sudden onset of pain and dyspnoea marks the first stage of the accident, the final collapse and death the real breaking through of the rent into the pericardium. Ramond and Baudoin (*Médecine*, Paris, 1921-22, ii, 426) suggest the possibility that in certain cases of prolonged evolution with each contraction of the heart the edges of the wound are forced tightly together, thus preventing the rapid development of hemopericardium. In those cases of long delay in the fatal outcome it seems more reasonable to assume as stated earlier in this paper that the sudden initial symptoms are due to an accident to the coronary vessels and at the end of some days the final and fatal attack, the evidence of rupture of the heart muscle. - Or may it not happen occasionally that the blood slowly bores its way through the diseased muscle?

The cause of death has been the subject of much speculation and of some experimental study. It seems obvious that the pressure of the blood forced into the pericardium through the opening in the heart wall must have some bearing on the heart action but that increased pericardial pressure alone is the cause of death as so often assumed is not entirely reasonable. Hopkins (*Proc. New York Path. Soc.* 1910-1911, n.s., x, 200) gives an excellent discussion of the subject and presents authoritative experimental evidence to show that an increase in intra-pericardial pressure in animals of only moderate degree if sudden will cause death. This author expresses his conviction that when the pressure in the pericardium becomes equal to that in the right auricle blood no longer enters the heart from the systemic veins. That this factor is not the cause of death in all cases can be easily proved by the fact that a few cases are on record where but very little or no blood was found in the pericardium, i. e., not a sufficient quantity

to alter the pressure significantly. There is a good deal which might be said in favor of the theory advocated by many that death is due to reflex causes. Those fatal cases without hemorrhage into the pericardium are very reasonably explained on this hypothesis.

Is the rupture always fatal? The post-mortem findings of extensive fibrosis marking the site of earlier infarct without rupture indicate positively that healing under these circumstances is not unusual. A few cases are on record in which scars have been found which the observer believes represent healing of a true rupture. The evidence is by no means convincing and on the theoretic grounds healing is impossible.

Rupture of the heart is a disease of old age. In a total of 602 cases tabulated by Krumbhaar and Crowell 72.5 per cent. were sixty or over. They further show that the relatively few cases occurring before middle life without coronary

diseases, are the ones due to the miscellaneous causes mentioned above.

Males predominate somewhat over females. Habits, occupation, diet, general hygiene and other similar factors are of only very minor if any significance in the consideration of etiology.

An ante-mortem diagnosis of spontaneous rupture of the heart is practically impossible. One can only consider its possibility under certain conditions in cases of sudden death. In an individual over sixty who dies suddenly with symptoms of great dyspnoea and intense precordial or epigastric pain of anginal type, there is a small chance that a rupture of the heart is the cause of death. Even a reasonably certain differentiation between this lesion and angina pectoris or coronary disease cannot be made. In those cases of slow evolution a careful physical examination is usually possible and may rarely give some data suggestive of rupture.

THE RELATION OF INFECTIONS OF THE UPPER RESPIRATORY TRACT TO CHRONIC AND SUB-ACUTE INFECTIONS OF THE LUNGS*

BY JOHN B. HAWES, 2ND., M.D.

In this paper I am calling attention to perfectly well-known facts but which are none the less frequently overlooked, namely, that many symptoms related to the lungs such as cough and raising, pain in the chest, etc., have their origin in infections higher up in the region of the nose and throat and likewise that many cases of bona fide disease of the lungs such as bronchiectasis, tuberculosis, etc., are kept active and their symptoms aggravated by such infections of the upper respiratory tract. Naturally, as my work, with the exception of certain non-pulmonary forms of tuberculosis, is almost exclusively confined to diseases of the lung, patients consult me, first, because they have tuberculosis, second, because they or someone else thinks they may have tuberculosis, and third, a large group because of cough, raising of sputum, pain, and other symptoms related to the lungs. Many of these patients of the latter class have been under treatment by their local practitioners for months and sometimes for years for what has been called a "chronic bronchitis" or some similar name and have been taking cough mixtures of all kinds during this period without benefit. On examination while I frequently find something actually wrong with the lung such as rales, etc., in a constantly increasing number I find that the lung condition is largely due to some infection higher up. It is this type of patient which I propose to discuss here. With a few exceptions I have referred these patients to Dr. Charles O. Day of Boston who does practically all of my nose and throat work.

I am considering here a group of 156 patients

whom Dr. Day and I have examined independently not only once but often several times with an x-ray of the lungs in every instance and of the accessory sinuses in the majority so that I feel that our diagnoses are fairly correct. Dr. Day has operated on a certain number of these and has been able to check up on the end results; in some he has simply given local treatment and in others has merely given advice which may or may not have been followed. While 156 cases is naturally too small a number on which to base any conclusions I have found it of distinct interest and value and believe it will be so to others to compare my own findings and diagnoses with those of the laryngologist and to try to formulate some ideas as to the effects of treatment of the upper respiratory tract on the pulmonary conditions and symptoms. The following table shows my own diagnoses of these 156 patients:

Bronchitis, chronic and subacute.	
Chronic asthmatic bronchitis.....	45
Pulmonary tuberculosis.	
Pulmonary tuberculosis and tuberculous laryngitis	36
Debility, fatigue, etc.....	19
? of tuberculosis, —negative.....	18
Chronic tonsillitis.....	11
Bronchial glands, non-tuberculous.....	6
Acute non-tuberculous pulmonary infection.....	5
Endocarditis, chronic.....	4
Chronic laryngitis, pharyngitis, non-tuberculous.....	3
Chronic pleuritis, non-tuberculous.....	3
Bronchiectasis.....	2
Tuberculous bronchial glands.....	2
Lung abscess.....	1
Asthma.....	1

In regard to the first and largest group of chronic and subacute bronchitis and asthmatic bronchitis, I realize that there are not a few who

*Read at the annual meeting of the American Climatological and Clinical Association, White Sulphur Springs, West Virginia, May, 1927.

are unwilling to accept the diagnosis of a chronic bronchitis in any form. I know of no other term, however, to designate a condition characterized by a chronic, harassing cough which is not due to bronchiectasis or any similar disease or secondary to a weak heart. The "debility and fatigue" group includes patients who came or were sent to see me chiefly because they thought they had tuberculosis. Pulmonary symptoms such as coughing and raising, etc., were not striking ones among them while the constitutional signs and symptoms such as loss of weight and strength, ease of tire, lack of energy, vigor, etc., and often fever and rapid pulse were usually present.

The next group which I have called "of tuberculosis," decided in the negative, constituted all patients who for some reason thought or had been told they had tuberculosis. The other diagnoses need no comment.

In each of these patients I found what I believed to be sufficient evidence of an infection of the upper respiratory tract to lead me to refer them to Dr. Day for examination from his point of view and subsequent operation or local treatment should this prove necessary. In the following tables I have taken the larger groups of these patients and analyzed the results of Dr. Day's examinations:

CHRONIC BRONCHITIS AND CHRONIC ASTHMATIC BRONCHITIS

45 Cases

Dr. Day's diagnoses:

Chronic tonsillitis.....	23
Deviated septum.....	14
Chronic rhinitis.....	13
Chronic pharyngitis and laryngitis.....	8
Disease of sinuses.....	8
Chronic tracheitis.....	4
Vaso-motor rhinitis.....	3
Infected adenoids.....	2
Hypertrophied turbinates.....	1

The large proportion of chronically infected tonsils is the most striking feature. The diagnosis of chronic tonsillitis or infected tonsils was made only after careful observation based on the application of suction to the tonsils in addition to other measures, the presence of enlarged or tender tonsillar glands and the history of repeated attacks of tonsillitis, etc. There is likewise a fairly large group of cases in which a deviated septum seems to be the most striking abnormality. As Dr. Day pointed out to me a deviated septum is of comparatively little importance if it did not produce secondary conditions in the nose such as chronic rhinitis, sinusitis and other conditions. We both believe that a simple deviated septum not causing symptoms should be left severely alone.

In the next table I have considered the 26 cases of pulmonary tuberculosis in which there was no laryngeal involvement:

26 CASES OF PH. I AND PH. II WITHOUT TB. LARYNGITIS

Dr. Day's diagnoses, as follows:

Chronic tonsillitis.....	15
Deviated septum.....	7
Chronic pharyngitis and laryngitis, non-tb.....	5
Disease of sinuses.....	5
Chronic rhinitis.....	4
Hypertrophied lateral bands.....	1
Polyp, nasal.....	1
Polyp, vocal cord.....	1
Hypertrophied turbinates.....	1

Here again chronically infected tonsils seemed to be the chief offenders with a deviated septum second. I have been rather surprised at the comparatively small part played by diseased sinuses in these two groups. I naturally make no claim that the removal of diseased tonsils or the straightening out of a deviated septum will cure pulmonary tuberculosis. On the other hand I am absolutely certain that I have had under my care not only these patients but others whose unsatisfactory progress was attributable chiefly to infections of the upper respiratory tract rather than to the tuberculous disease in the lung and that in these cases improvement was made only after suitable measures had been taken to remove or counteract the infection or the mechanical faults in the nose and throat. The question will naturally arise as to whether operations in this region, whether for the removal of tonsils, submucous resection of the septum or the opening and draining of antrum or sinuses, should be done at all and if so under local or general anesthesia. Dr. Day feels that in adults local anesthesia is the ideal method for the removal of tonsils but here at least there is a strong prejudice against it. In children a general anesthetic is of course necessary. In sinus and antrum operations in the majority of cases a general anesthetic is best. I confess that I am gradually losing the fear I formerly had of a general anesthetic in pulmonary tuberculosis.

The third group consists of 22 children 15 years of age or under. In the following table I compare my own diagnoses with those of Dr. Day:

22 CHILDREN, 15 YEARS OF AGE OR UNDER

Diagnosis by J. B. H.	Diagnosis by C. O. D.
Bronchial glands, non-tb.....	Infected tonsils and adenoids.....
Chronic bronchitis.....	Sinus disease.....
Chronic asthmatic bronchitis, asthma.....	Chronic rhinitis.....
Infected tonsils.....	Chronic pharyngitis and laryngitis.....
Bronchial glands, tb.....	Deviated septum.....
Chronic, non-tb., pulmonary infections.....	Vaso-motor rhinitis.....
Fatigue and debility.....	Nasal polyp.....

I would call attention to the very small proportion of cases in which I was willing to make a diagnosis of bronchial gland tuberculosis although almost all of these children came to me with this diagnosis already made. In Massa-

chusetts at least the diagnosis of tuberculous bronchial glands is becoming increasingly common but I believe it is a correct one in only a very small percentage of cases. Here again when Dr. Day examined these children he found infected tonsils and often accompanying adenoids to be the chief offenders, with disease of the sinuses second and deviated septum well down in the list. The treatment of this group produces far more satisfactory results than in adults.

RESULTS

It is extremely difficult to find out exactly what results one has obtained in such a series as this. Many of these patients have come back for further examination and on them I can form a clear idea as to whether or not there has been real improvement. We have written to all the others or to their physicians and have sent a second series of follow-up letters. As a whole the general trend of the replies we have received and the patients we have re-examined has been distinctly favorable. One patient who had spent a considerable period at Saranac Lake but who had had a recurrence of symptoms since an influenza on her return came to see me with reference to this. On examination I felt strongly that her symptoms were being kept up by the tonsils and were not really due to a reactivation of her tuberculous process. Dr. Day agreed with me that the tonsils were in very bad condition and they were accordingly removed. She now writes me that she is in the very best of health with an entire disappearance of coughing, raising, etc., and a marked increase in strength and energy. Of course, I cannot prove in the slightest that the removal of the tonsils was necessarily the cause of her improvement although I believe so.

In another case, that of a dentist, with a history of having had for years the most marked and harassing cough that I have ever seen, the removal of the tonsils by Dr. Day produced an almost miraculous improvement and complete cessation of his symptoms for a few months. Afterwards, however, the cough returned as badly as ever so that I cannot see but that he is even worse off now than he was before.

Dr. Day did 14 operations for the removal of diseased tonsils and adenoids, 5 antrum operations, 9 submucous resections for deviated septum and various other minor operations and in addition local treatment, consisting chiefly of cleaning out the tonsils by suction and cauterizing the turbinates. I feel that the advice he gave these patients as to the care and hygiene of the nose and throat was an important factor.

I have grouped 38 patients on whom Dr. Day operated, including in this the more extensive cauterization and other intensive local treatments. My diagnoses of this group were:

Chronic bronchitis and asthmatic bronchitis.....	15
Bad tonsils.....	7
Pulmonary tuberculosis.....	4
Bronchial glands, non-tb.....	3
Chronic pleuritis.....	3
Bronchiectasis.....	2
Fatigue.....	1
Subacute pulmonary infection.....	1
Chronic laryngitis.....	1
Tb. bronchial glands.....	1

Dr. Day's diagnoses were divided among *diseased tonsils and adenoids, antrum and sinus disease, deviated septum* and a few others. Our results in these cases with reference to the conditions and symptoms for which they consulted me were:

Apparently cured.....	7	} 50%
Markedly improved.....	12	
Improved.....	2	
Not improved.....	2	
Dead.....	1	

Of the entire group of patients concerning whose present condition we have fairly accurate knowledge 43 or nearly 30 per cent. were distinctly improved as to their local symptoms, by that meaning cough, raising and nose and throat troubles, and 17 were unimproved. Of the same group 54 or approximately 35 per cent. showed a decided gain in general conditions, strength, energy, weight, etc., while only 6 were unimproved. These figures while not very striking certainly tend at least to show that the cleaning up of nose and throat infections and the remedying of local defects in that region has a decidedly beneficial effect on pulmonary disorders of the type I have described here.

I cannot see that there are any particular conclusions to be drawn from this paper except the ones which are perfectly obvious, namely, that a certain number of symptoms related to the lungs such as coughing, raising, etc., and another group of symptoms strongly suggesting pulmonary tuberculosis such as loss of weight and strength, rapid pulse and fever, may be due to infections of the upper respiratory tract and that this possibility should always be borne in mind if we expect to do the best for our patients. I would likewise emphasize the importance of a sane, sound and conservative nose and throat specialist for this work and that there should be the utmost coöperation between the internist and the rhinologist.

My sincere thanks are due Dr. Day for his sound and conservative advice and help in preparing this paper.

LOCAL VARIATIONS IN CANCER MORTALITY¹

BY LUCILE EAVES

THE analysis of factors associated with local variations in the prevalence of disease frequently has revealed causes of illness and means of prevention. This method of approach to the baffling problems of cancer mortality is now being applied by the Sub-Committee on Cancer of the Health Organization of the League of Nations. Cancers of the female breast and genital organs were studied first because, to use the language of the official report, "they are such distinctive and well-recognized forms of cancer that it is improbable that deaths which are due to these conditions could escape being referred to their appropriate causes in the official statistics of mortality". It was agreed that practices of reporting deaths in England and Wales, Holland and Italy were such that the rates are comparable, yet this first investigation showed that

three participating countries as a whole but also between the different sub-divisions of each country, have been firmly established²."

These preliminary studies were followed by a more elaborate investigation in which efforts were made to discover the possible correlations between variations in cancer mortality and the distribution of racial stocks. The meager conclusions reached about racial factors in cancer mortality are not convincing, but the data presented in the report show that, in the eleven European countries studied, the mortality rates from all forms of cancer show the same striking local variations observed in the earlier studies of deaths from cancer of the female breast and genital organs. Thus the most recent cancer rates reported for Italy were those showing the deaths in 1919-1921 of persons 40 years old and

TABLE I. CANCER MORTALITY. RATE PER 10,000.

CANCER OF THE BREAST (FEMALE).

	England and Wales.	Italy.	Holland.
1911.	1.84	0.58	0.98
1912.	1.97	0.55	1.19
1913.	2.02	0.59	1.08
1914.	1.99	0.59	1.10
1915.	2.02	----	1.12
1916.	2.11	0.56	1.15
1917.	2.13	0.56	1.10
1918.	2.07	----	1.12
1919.	2.20	----	1.27

¹ Table from Report of Cancer Committee of Health Organisation of the League of Nations, C. H. 220.

women in England and Wales die of cancer of the breast with a frequency which is almost twice that of Holland and four times that of Italy.

The studies of variations between the three countries in deaths from cancer of the female genital organs were complicated by efforts to make allowance for differences in the proportion of single and married women, in the ages at marriage and in the numbers of children borne, but the conclusions reached confirm the earlier observations of remarkable local variations in cancer rates. The report declares, "The exceedingly unequal incidence of fatal cancer of the selected sites, not merely as between the

over. The rates per hundred thousand inhabitants varied from 111 in Sardinia to 326 in Tuscany. The average annual death rates from cancer per 100,000 inhabitants in Holland, for the population 40 years old and over in the period 1919-1921, varied from 295.2 in Limbourg to 418.5 in Frise. The cancer death rates in England were calculated for the population 45 years old and over during the period 1919-1923. The annual deaths per 100,000 varied from 103.6 in Warwick County to 300.3 in Suffolk East. Rates per 100,000 in Switzerland for the population 40 years old and over varied from 380 in Geneva to 441 in Zurich. Variations in Norwegian rates per 100,000 for the population 40 years of age and over ran from 240.2 in Nordland to 405.5 in Bergen. Similar striking local variations in the distribution of deaths from cancer were discovered in the other European countries covered by the investigation.

The Cancer Commission concludes its 1926 re-

² Acknowledgments of assistance in gathering material presented in this paper are due to the following persons: Dr. W. H. Davis, of the Federal Census Bureau, generously supplied an early report of the statistics of cancer mortality for 1924 and also the factors necessary for calculating adjusted rates for states and cities. Students in my Simmons College courses and Miss Ruth Eaves assisted me in the Boston field work. I am most deeply indebted to my Assistant in the Research Department of the Women's Educational and Industrial Union, who has gathered a large part of the data obtained from the Census and has also given invaluable help in the preparation of charts.

³ Report on the Results of Demographic Investigations in Certain Selected Countries, C. H. 333, I, p. 27.

port with recommendations for continued efforts to discover possible racial factors influencing cancer mortality, and closes with the suggestion:

"Convinced of the value of blood analyses, from the point of view both of more accurate knowledge of the human races and of the relations between the 'internal medium' (bodily fluids) and diseases, we recommend that such analyses should be carried out with reference not only to the nationality of the subject under consideration but also of his race—

a range of 47.4. The crude rates varied from 135.7 in New Hampshire to 41.7 in South Carolina, or through a range of 94. There were similar wide variations in the cancer death rates of 1923.

The 1924 range in the adjusted rates for cities was even greater as New York City had a rate of 125, with 154.5 for Manhattan Borough; St. Paul, half way across the continent, and San

TABLE 2
CANCER DEATH RATES IN REGISTRATION AREA OF THE UNITED STATES, 1923-1924

State	1924				1923			
	Adjusted Rate	Rank	Crude Rate	Rank	Adjusted Rate	Rank	Crude Rate	Rank
New York,-----	105.3	1	115.9	6	102.6	1	112.9	7
Massachusetts,--	103.9	2	123.1	3	99.8	3	118.2	5
California,-----	102.7	3	130.8	2	96.8	5	123.3	3
Rhode Island,---	101.5	4	115.1	7	100.9	2	114.4	6
New Jersey,-----	99.0	5	99.7	14	93.0	7	93.6	15
Minnesota,-----	97.5	6	101.7	11	96.1	6	100.3	10
Illinois,-----	95.9	7	101.4	12	92.4	8	97.7	13
Connecticut,---	95.9	8	105.0	9	90.7	9	99.3	11
Maryland,-----	95.5	9	104.2	10	99.3	4	108.3	8
Oregon,-----	94.2	10	111.3	8	86.3	12	102.0	9
New Hampshire,--	91.0	11	135.7	1	82.3	16	122.7	4
Pennsylvania,---	90.1	12	91.5	21	89.3	10	90.7	19
Wisconsin,-----	88.9	13	101.0	13	81.4	19	92.5	16
Washington,-----	88.8	14	95.7	16	84.3	14	90.9	18
Michigan,-----	85.5	15	92.5	20	81.7	18	88.4	20
Maine,-----	84.7	16	122.1	4	88.8	11	128.0	1
Missouri,-----	83.4	17	95.5	17	80.5	21	92.2	17
Utah,-----	82.7	18	67.9	25	80.7	20	66.3	25
Ohio,-----	82.5	19	95.4	18	81.9	17	94.6	14
Vermont,-----	81.4	20	119.7	5	84.7	13	124.6	2
Nebraska,-----	81.1	21	84.2	22	77.5	23	80.4	23
Colorado,-----	80.6	22	83.3	23	83.1	15	85.9	21
Delaware,-----	79.2	23	93.7	19	67.9	26	80.3	24
Louisiana,-----	78.2	24	62.0	26	76.8	24	60.9	27
Indiana,-----	77.5	25	96.2	15	79.9	22	99.2	12
Kansas,-----	71.4	26	81.7	24	72.1	25	82.4	22
Montana,-----	69.5	27	57.7	30	65.6	29	54.5	30
Virginia,-----	67.2	28	61.1	28	66.1	28	60.1	28
Florida,-----	63.4	29	58.7	29	67.0	27	62.1	26
Kentucky,-----	62.7	30	61.3	27	60.6	30	59.2	29
North Carolina,--	60.0	31	47.9	32	56.8	32	45.4	33
Tennessee,-----	58.2	32	52.8	31	54.9	33	49.8	31
Mississippi,-----	57.9	33	46.2	33	58.5	31	46.7	32
South Carolina,--	57.7	34	41.7	34	52.2	34	37.7	34

that is, noting, in the case of each individual, the physical and descriptive features characteristic of the race in question."—Publications de la Société des Nations, III, Hygiène, 1926, III, 24, p. 325.

Local variations in cancer mortality in the United States are equally striking and inexplicable, although the range is not so great as that shown by these European studies. Thus the adjusted, general, cancer rates for 1924 varied between the states of the registration area from 105.3 per hundred thousand in New York to 57.9 in Mississippi and South Carolina, giving

Francisco on the Pacific Coast had rates of 144.9 and 144.8 respectively; while New Bedford in Massachusetts and San Antonio, Texas, with rates of 82.4 and 76.5 were able to cut in half the extreme rates of other cities. The crude rates for 1923 varied by as much as 103.

IMPORTANCE OF VARIATIONS BETWEEN NATIVE AND FOREIGN-BORN STOCKS

Studies of variations between native and foreign-born stocks supply the most fruitful approach to an examination of ethnological fac-

tors of mortality statistics in the United States. Census reports do not classify immigrant stocks by racial groups or by location within the nations reported as their countries of origin. Anthropological studies made for the Immigration Commission indicate that characteristics accepted in the recent European cancer studies as in-

racial stocks which have supplied the population of the United States are highly composite in origin, and this hybrid character often is increased by intermarriage after arrival. Students of heredity are familiar with the difficulties of discovering what recessive traits are present in hybrid stocks. Any attempt to classify

TABLE 3
PROPORTION OF FOREIGN-BORN IN THE POPULATION OF STATES IN THE
REGISTRATION AREA, IN RELATION TO THE ADJUSTED
CANCER DEATH RATES FOR 1924

State	Adjusted Cancer Death Rate 1924	Foreign Born		Per cent of Total Population Foreign-born and 45 years of age or over 1920	Increase or Decrease 1910-1920 in Per cent of Foreign-born 45 years of age or over
		Per cent of Foreign-born 1920	45 years of age or over 1920		
New York,-----	105.3	24.8	34.6	9.3	+ 6.1
Massachusetts,-----	103.9	28.0	37.7	10.6	+ 8.6
California,-----	102.7	19.9	40.8	8.1	+ 3.0
Rhode Island,-----	101.5	28.7	38.6	11.1	+ 9.7
New Jersey,-----	99.0	25.4	34.7	8.1	+ 6.1
Minnesota,-----	97.5	20.4	54.5	11.1	+10.5
Illinois,-----	96.9	18.6	47.0	8.7	+11.9
Connecticut,-----	95.9	27.3	33.9	9.2	+ 5.6
Maryland,-----	95.5	7.0	42.8	3.0	+ 2.8
Oregon,-----	94.2	13.0	46.8	6.1	+10.7
New Hampshire,-----	91.0	20.6	39.3	8.1	+10.3
Pennsylvania,-----	90.1	15.9	34.2	5.4	+ 7.5
Wisconsin,-----	88.9	17.5	56.1	9.8	+ 5.0
Washington,-----	88.8	18.4	42.7	7.9	+11.0
Michigan,-----	86.5	19.8	40.1	7.9	- 2.3
Maine,-----	84.7	14.0	39.3	5.5	+ 8.0
Missouri,-----	83.4	5.5	53.4	2.9	+ 5.4
Utah,-----	82.7	12.6	50.6	6.4	+ 5.9
Ohio,-----	82.5	11.8	36.7	4.3	- 0.7
Vermont,-----	81.4	12.6	41.0	5.2	+ 4.7
Nebraska,-----	81.1	11.5	57.8	6.6	+ 9.9
Colorado,-----	80.6	12.4	44.0	5.5	+ 9.9
Delaware,-----	79.2	8.9	33.8	3.0	+ 1.0
Louisiana,-----	78.2	2.6	45.6	1.1	+ 2.3
Indiana,-----	77.5	5.1	44.7	2.3	- 0.8
Kansas,-----	71.4	6.2	46.7	2.9	- 2.9
Montana,-----	69.5	17.1	38.3	6.5	+12.4
Virginia,-----	67.2	1.3	35.6	.5	+ 0.3
Florida,-----	63.4	4.4	40.9	1.8	+11.7
Kentucky,-----	62.7	1.3	59.8	.8	- 1.0
North Carolina,-----	60.0	.5	37.8	.1	+ 2.4
Tennessee,-----	58.2	.7	50.7	.3	+ 2.9
Mississippi,-----	57.9	.4	46.6	.2	+ 5.0
South Carolina,-----	57.7	.4	38.0	.1	- 4.2

dicative of varying racial origins, may be quickly modified by residence in the New World environment. Thus children born to immigrant mothers a few months after arrival in the United States begin to show modifications in the shape of the head and face, and those born some years later differ decisively in stature and head forms from their foreign-born relatives³. The

American population into the poorly-defined racial groups which anthropologists claim to have established in European countries would be apt to prove unscientific, if not futile. Such attempts may well be postponed until studies have been made of the more obvious variations between stocks subject through several generations to the influence of the American environment and those produced and nurtured in European countries.

³ Changes in Bodily Form of Descendants of Immigrants. Vol. 28, Reports of the Immigration Commission.

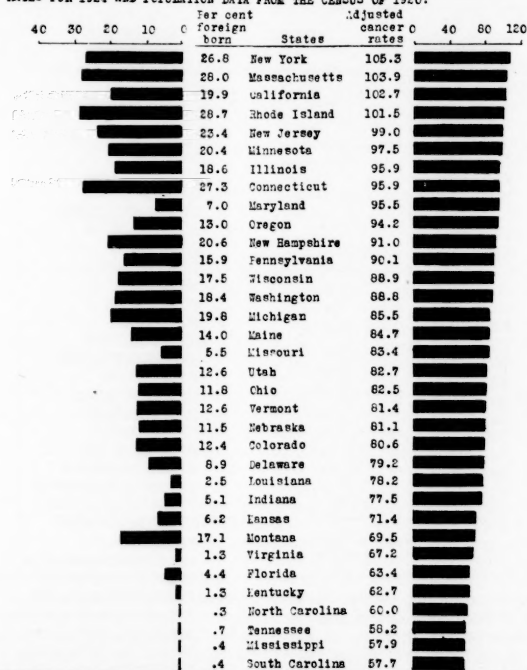
In this comparison of native and foreign stocks, it will be assumed that the native stock is composed of native-born whites, of native parentage, and negroes, and that the foreign includes only foreign-born whites of foreign parentage. Practically all the negroes in the United States are native born, and a recent careful survey of the mortality rates from cancer, indicates that, when adjusted rates are compared, there is but little difference between white and

talinity; first, because a high proportion has not yet reached the age when this disease takes its heaviest toll; and, second, because it is probable that in these groups heredity and habits of life may be as much influenced by one parent or environment as by another, so that variations are neutralized.

Striking correlations between variations in the adjusted cancer death rates for 1924, and in the percentages in the population of these

CHART I

RELATION OF CANCER MORTALITY TO THE PERCENTAGE OF FOREIGN-BORN WHITES IN THE POPULATION - REGISTRATION AREA OF THE UNITED STATES. ADJUSTED DEATH RATES FOR 1924 AND POPULATION DATA FROM THE CENSUS OF 1920.



colored in mortality from this disease¹. The tendency of the negro population to succumb to other diseases before reaching the ages when cancer is common has given a false impression of their immunity. There remains a group of native-born of foreign or mixed parentage, varying from less than one to forty per cent. of the entire population, which has been omitted from the charts and tables. It seems probable that this portion of the population has but little influence in determining variations in cancer mor-

ethnic groups, are shown in the accompanying tables and charts. (Tables 2 and 3. Charts I-IV.) The positive correlation, $+.86 \pm .03$, between the cancer mortality and the proportion of foreign-born in the population, and a corresponding inverse correlation with the native stock, indicates that there are factors which give relatively greater immunity from cancer to ethnic groups resident in the United States for two or more generations. No doubt departures from the general trends must be traced to varied and complex influences. Thus, Montana may

¹U. S. Mortality Statistics, 1923, p. 42.

have less than its quota because its citizens seek medical services in other states. The great hospitals of Baltimore attract patients who increase the death rates for Maryland. Differences in dietary habits and in the accuracy and completeness of diagnosis of causes of death which will be discussed later may explain other departures from consistent trends.

It cannot be assumed, however, that the actual relationship between the proportion of foreign-born in the population and the cancer death rate is so complete as this apparent correlation indicates. There has been a rapid increase since 1910 in the proportion of foreign-born in the age groups above 45. (Table 3.) As is well

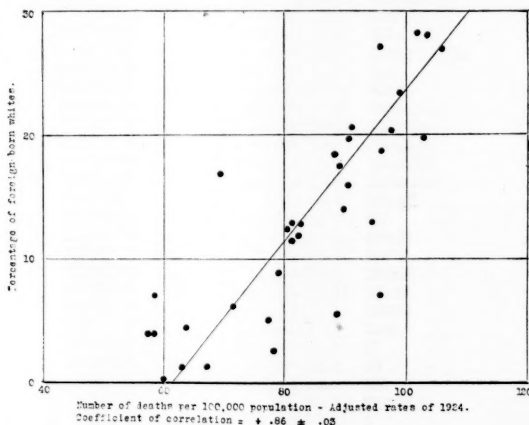
cent foreign origin acquire an immunity to the disease equal to that of more fully adjusted ethnic groups, we may hope for a future checking of the increase in the cancer rates.

Failure to recognize the more obscure forms of cancer may have lessened the death rates in some of the Southern states having very low rates from the disease. The magnitude of this factor may be estimated roughly from the rates for deaths from unknown or ill-defined causes. (Table 4.)

Evidently the rates for deaths from unknown causes do not vary consistently with those for cancer. Thus Maine which has the highest crude cancer death rate has also a greater rate for the

CHART II

CORRELATION BETWEEN CANCER MORTALITY AND PERCENTAGE OF FOREIGN-BORN WHITES.

Adjusted rates of 1924 in states of the registration area.
Population from Census of 1920.

known, immigrants come to the United States when in the prime of life: four out of five are in the productive age groups between 14 and 45. The heaviest immigration has taken place between 1880 and 1910. This large imported population has been reaching the ages subject to the degenerative diseases of old age since 1900. One explanation of the rapid increase in our cancer death rates during the last twenty years is to be found in this increasingly high proportion of older persons from ethnic groups more subject to the disease than the native-born population⁵. If descendants of the population of re-

known causes than is found among the 24 states ranking highest in cancer death rates. South Carolina with a much lower cancer death rate than any other state is exceeded in the rates of deaths for unknown causes by four states which have cancer death rates 8 to 24 higher than this lowest rate in the registration area. When, as in Mississippi and North Carolina, the death rates for unknown and ill-defined causes amount to more than a hundred, there is every reason to believe that the reported cancer rate is too low, but the difference in the cancer rates of these states and of those imme-

⁵ In 1920 in the State of New York, for example, an adjusted rate of 117.1 per 100,000 enumerated population appears for those having mothers born in Ireland and a rate of 108.2 for those having mothers born in Germany, as against 73.9 for those having mothers born in the United States.—*Mortality Statistics*, 1923, p. 42. The average crude rates by birth places for Boston,

for 1921, 1922, 1923, were as follows: United States, 82.7; Ireland, 302; Teutonic countries, 369; Scandinavian, 228; Canada, 267.—*Special Report of the Massachusetts Department of Public Health and Public Welfare Relative to the Prevalence of the Disease of Cancer*, etc., p. 44.

diately above them in rank makes it probable that no radical changes in the order of variation in cancer mortality will result when the vital statistics of these states are perfected. (Tables 2 and 3.)

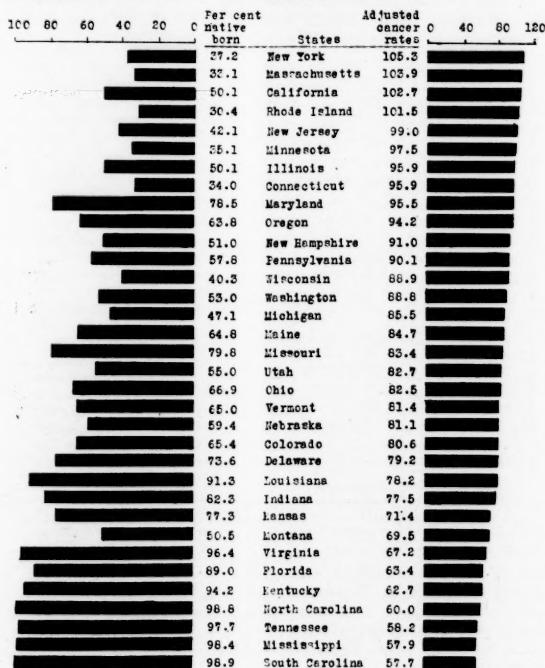
IS URBAN RESIDENCE RATHER THAN FOREIGN BIRTH
THE CHIEF FACTOR INFLUENCING VARIATIONS
IN CANCER MORTALITY?

Overcrowding and various artificial conditions of urban residence have been charged with

of the population of the United States has but slight value as an indication of living conditions. The actual density of the population reported as urban varies from the overcrowded blocks of portions of New York City or Chicago to conditions found in numerous Middle-Western, Southern or Pacific Coast cities, where there are long stretches of shady highways separating single-family homes which are surrounded by ample grounds. It is evident that mere proximity to other persons is not likely to explain a ten-

CHART III

RELATION OF CANCER MORTALITY TO NATIVE-BORN WHITE AND NEGRO POPULATION -
REGISTRATION AREA OF THE UNITED STATES. ADJUSTED DEATH RATES FOR 1924
AND POPULATION DATA FROM THE CENSUS OF 1920.



the responsibility for excessive cancer death rates. Since the immigrant population,—particularly that arriving during the past twenty-five years,—has tended to cluster in cities, it is impossible to determine whether the higher death rates from cancer of the foreign-born are due primarily to their greater tendency to contract the disease, or to the fact that they suffer more from the various unwholesome conditions found in more densely populated centers.

The present classification by urban and rural

density to disease. Causes must be sought in unwholesome habits of life, or in peculiar strains, exposures to infection or other baleful influences.

A comparison of the percentages of cancer deaths in urban communities with the percentages of urban population of states in the registration area shows that there are as many states where the urban cancer deaths are below as where they are above the quota to be expected because of the relative importance of urban

population. (Chart V.) Thus there are 17 states in which the percentages of urban cancer deaths are less and 17 in which they are more than the percentages of urban population. Reason for questioning the theory that density of population promotes the cancer death rates is found also in the tendency to have a surplus of cancer deaths credited to urban communities in the very states where urban life is accompanied with the smallest amounts of overcrowding. Thus such agricultural states as Minnesota, Utah, Nebraska, Tennessee, Mississippi and South Carolina have an excess of urban cancer

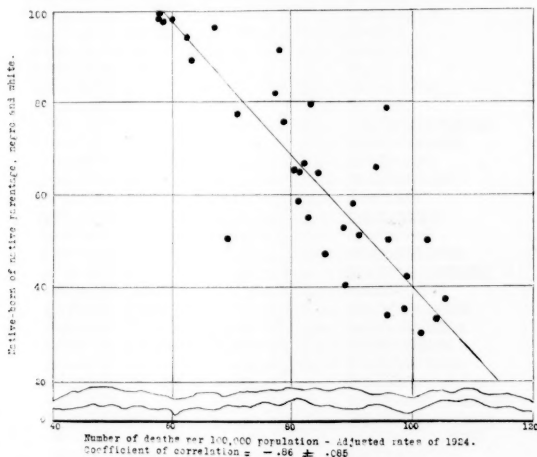
of death in states of the registration area. It is true that the foreign-born suffer more from the supposedly unwholesome influences of urban life, but as yet the greater tendency of urban residents to die of cancer has not been established.

STUDY OF PHYSICAL HABITS AS CHIEF CAUSES OF LOCAL VARIATIONS IN CANCER MORTALITY

Differences in physical habits seem to promise the most hopeful and obvious explanations of variations in tendencies to succumb to sickness, —particularly to the degenerative diseases of

CHART IV

CORRELATION BETWEEN CANCER MORTALITY AND PERCENTAGE OF
NATIVE BORN OF NATIVE PARENTAGE—WHITES AND NEGROES
Adjusted rates of 1924 in states of the registration-
area. Population from Census of 1920.



deaths; while New York, Massachusetts, Ohio, Illinois and Michigan,—states with crowded industrial communities,—all show a shortage. Here again it must be remembered that the comparisons are made with crude rates. Probably if allowance could be made for the high proportion of young people who seek employment in large cities, and for the tendency of old people to retire to rural homes, these variations might be largely equalized.

Summarizing the discussion to this point, we find that in the United States, as in Europe, there are remarkable local variations in cancer mortality. These show a high correlation with variations in the percentages of foreign-born in the population. The significance of this correlation may be lessened but cannot be destroyed by differences in accuracy of diagnosis of causes

later years. It is generally agreed that, with but few exceptions, heredity is not responsible for the actual transmission of disease, but rather for the continuance of constitutional weaknesses which increase the liability to attack of certain maladies. Such predisposing weaknesses may contribute to many deaths from cancer, but physical habits of the victims resulting in the long-continued irritations which so frequently precede the final cell mutinies characteristic of cancers may well be studied as possible immediate causes of the disease. Then the present inquiry narrows itself to such questions: What variations in physical habits are associated with differences in cancer mortality? Since the cancer death rates increase with the percentages of foreign-born in the population, special efforts should be made to discover physical habits of

foreign-born residents differing from those of natives, and related to the forms of cancer which cause their deaths with exceptional frequency.

Sources of Information

The present effort to discover the physical habits which may be related to cancers in certain portions of the body will be based chiefly on two overlapping, Boston, sample groups. The

year period is better adapted to our purposes. The customary rates^a have little or no value for this examination of nationality variations in the forms and amounts of cancer, because of the absence of census data showing age distributions of the foreign-born. For example, it is probable that the native-born, Irish and Canadian have much higher proportions who have reached the ages subject to cancer, than are

TABLE 4
CRUDE DEATH RATES FROM CANCER AND FROM UNKNOWN
AND ILL-DEFINED DISEASES. STATES OF
REGISTRATION AREA, 1923.

State	Cancer Rates	Rates for Unknown and Ill-defined Diseases
Maine,-----	128.0	14.8
Vermont,-----	124.6	7.4
California,-----	123.3	3.3
New Hampshire,-----	122.7	5.2
Massachusetts,-----	118.2	3.5
Rhode Island,-----	114.4	6.3
New York,-----	112.9	1.4
Maryland,-----	108.3	9.0
Oregon,-----	102.0	5.4
Minnesota,-----	100.3	7.0
Connecticut,-----	99.3	3.5
Indiana,-----	99.2	1.2
Illinois,-----	97.7	3.1
Ohio,-----	94.6	5.0
New Jersey,-----	93.6	2.6
Wisconsin,-----	92.5	3.1
Missouri,-----	92.2	13.7
Washington,-----	90.9	7.1
Pennsylvania,-----	90.7	5.1
Michigan,-----	88.4	8.1
Colorado,-----	85.9	3.1
Kansas,-----	82.4	11.0
Nebraska,-----	80.4	12.0
Delaware,-----	80.3	2.2
Utah,-----	66.3	21.4
Florida,-----	62.1	77.4
Louisiana,-----	60.9	41.2
Virginia,-----	60.1	41.6
Kentucky,-----	59.2	28.0
Montana,-----	54.5	12.9
Tennessee,-----	49.8	80.7
Mississippi,-----	46.7	123.3
North Carolina,-----	45.4	101.9
South Carolina,-----	37.7	58.5

first of these includes all persons who died of cancer during the four-year period, 1921-1924. Victims of cancers of the stomach and liver, of the breast and female genital organs, during the years 1923-1924 were studied more intensively by means of field visits to surviving relatives and friends, and of hospital records telling of family or personal physical histories and of medical care during the fatal attacks of cancer.

A percentage rather than the customary rate distribution of the sample of deaths by nationalities and locations of cancers during the four-

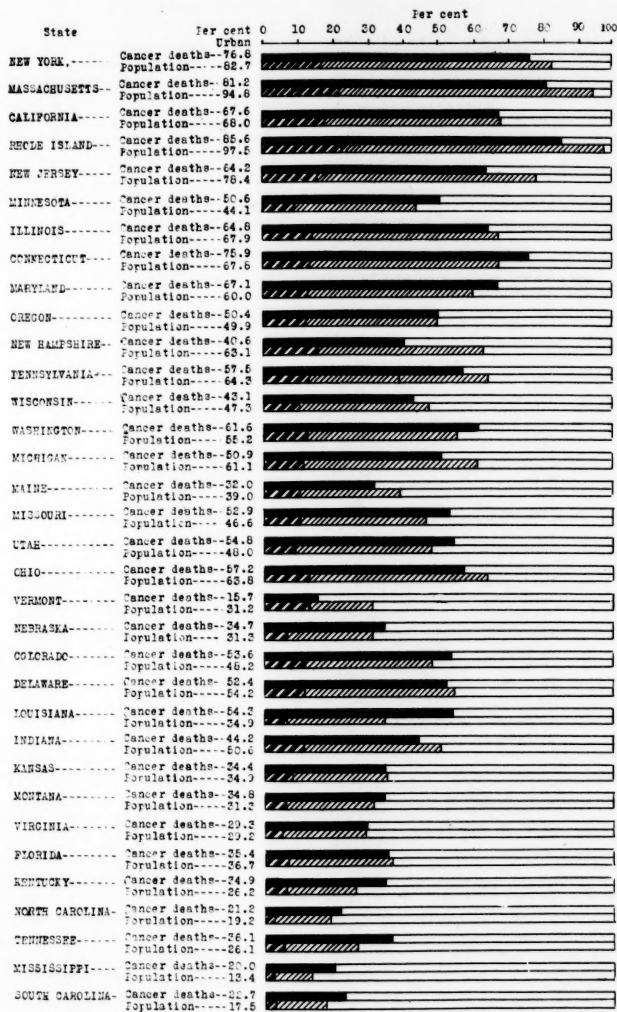
year period is better adapted to our purposes. The customary rates^a have little or no value for this examination of nationality variations in the forms and amounts of cancer, because of the absence of census data showing age distributions of the foreign-born. For example, it is probable that the native-born, Irish and Canadian have much higher proportions who have reached the ages subject to cancer, than are

While the relative frequencies with which different parts of the body are attacked are about the same in Boston as in the country at large, the percentages of Boston deaths due to attacks on certain parts of the body vary slightly from those of the entire registration area. This would follow naturally because of varia-

^aA table of average crude rates by nationality groups for Boston, for the years 1921-1923, will be found on page 44 of the Special Report of the Massachusetts Departments of Public Health and Public Welfare.

CHART V

DISTRIBUTION OF CANCER DEATHS AND POPULATION BETWEEN URBAN AND RURAL COMMUNITIES
— REGISTRATION AREA OF THE UNITED STATES. CRUDE CANCER DEATH RATES FOR 1924*
AND POPULATION STATISTICS OF THE CENSUS OF 1920.



■ Cancer deaths in urban communities.

▨ Urban population.

▨ Urban population over 45 years of age.

□ Deaths in rural communities or rural population.

TABLE 5. DEATHS FROM CANCER IN BOSTON, 1921-1924, DISTRIBUTED BY NATIONALITIES OF DECEASED AND LOCATIONS OF CANCER.

A - NUMBERS

Location of cancer	United States				Ireland				Russia				Scandinavia				Latin America				Not stated
	Total	Native	Foreign	Other	Total	Native	Foreign	Other	Total	Native	Foreign	Other	Total	Native	Foreign	Other	Total	Native	Foreign	Other	
All locations,-----	3782	1704	816	699	1322	265	128	210	117	81	17	481	7	57	15						
Buccal cavity,-----	257	112	40	68	114	8	14	12	10	3	--	26	--	2	2						
Stomach, liver,---	1231	442	195	242	426	128	55	72	48	36	6	167	4	25	6						
(Peritoneum,-----	653	314	152	123	239	38	18	37	18	8	1	83	--	11	2						
(rectum,-----	502	281	135	65	167	15	12	19	10	11	4	75	1	6	2						
Female genitals,--	385	202	109	64	129	10	9	27	7	7	--	49	1	6	3						
Breast,-----	57	23	13	21	28	1	--	4	--	1	--	6	--	1	--						
Skin,-----	117	56	32	22	39	9	--	8	5	2	1	12	--	1	1						
Male genitals,---	478	224	120	77	150	50	13	27	15	10	4	52	1	5	--						
Other organs,-----	102	50	20	17	30	5	7	4	4	3	1	11	--	--	--						
Unspecified,-----																					

¹ French, Spanish and Portuguese.

tions in the composition of the population. The chief differences in percentages by locations of fatal cancers for the entire population of Boston and for that of the country at large should be noted in order to judge the extent to which the Boston group may be regarded as typical.

Cancers of the stomach and liver are by far the most common, constituting 32.5 per cent. of the Boston cases (1921-1924) compared with 38.1 per cent. (1923) in the country at large. Next in importance are cancers of the female genital organs, 13.3 per cent. of Boston cases and 14.1 per cent. for the entire registration area. The comparative percentages for other sites are as follows: Peritoneum, intestines and rectum, Boston, 17.3 per cent., the United States, 8.6 per cent.; buccal cavity, Boston, 6.8, U. S., 3.4; male genitals, Boston, 3.1, U. S., 2.8. It must be borne in mind that these percentages show merely *relative frequencies* of the attack on different parts of the body. Since the general cancer rate of Boston is quite high, the rates per hundred thousand of deaths from special forms of cancer may equal or exceed those of other parts of the country. It is true also that significant variations between nationality groups in Boston may be influenced by other factors not present elsewhere. We have already called attention to striking local variations in cancer death rates revealed in recent studies of European countries. Immigrants to this country often distribute themselves in colonies composed of relatives and friends who came from the same or neighboring communities. Thus Chicago may receive its immigrant Italians from communities less afflicted with cancer than those supplying Boston or New York. These complex factors must be considered when estimating the extent to which results of a Boston study can be applied to other parts of the United States.

Dietary Habits and Cancer

Since over half of the cancers attack some part of the alimentary tract, it is evident that the study of physical habits causing variations in cancer mortality should begin with the examination of dietary habits. The stomach is by far the most common location of fatal cancers. An examination of percentages of deaths from cancers of the stomach in the different nationality groups of Boston shows at once that there must be variations in physical habits resulting in radically different manifestations of the tendency to cancerous growths. Thus the cancers attacked the stomach and liver in a third of the Irish, British, Canadian and Latin cases, in nearly or over half the Russian-Polish and Baltic, but in only one-fourth of those of native stock.

The question of what are the sources of the long-continued irritations which gave rise to these cancers of the stomach is a complex one, to which data available at the present time per-

mit merely tentative answers. Probably the chief dietary difference between native and foreign stocks in the United States is to be found in the extent of use of alcoholic beverages. The thoroughness of the long educational propaganda against their use is evident from the general establishment of dry areas prior to the adoption of prohibition as a national policy. A comparison of the maps of wet and dry territory during the period prior to the enactment of the Eighteenth amendment, and of those showing variations in cancer mortality, gives much more striking correlations than are found in the European studies of the relation of local variations in cancer death rates to the distribution of racial stocks.

Brief quotations from the 1918 *Year Book of The Anti-Saloon League* will show the slight use of alcoholic beverages in the five states having the lowest cancer death rates:

South Carolina, p. 299.

"The sale of liquor has in reality been prohibited in the state of South Carolina since 1892 except as sales were made by the state or county governments through the dispensary until the state-wide prohibitory law went into effect. Under the state-wide law no alcoholic beverage may be sold within the state."

Mississippi, p. 228.

"Mississippi has had state-wide Prohibition since January 1, 1909. Prior to that date the state was under a local option law adopted in 1886. As a result of the operation of this law, 69 of the 77 counties in the state had adopted Prohibition before the state-wide law was enacted, leaving only about 10 per cent. of the state's entire area to be changed from the license to the no-license column when the Prohibition law went into effect."

Tennessee, p. 304.

"Tennessee is under statutory Prohibition. The law was enacted by the Legislature in January, 1909, and became effective July 1, 1909."

North Carolina, p. 264.

"North Carolina is under statutory Prohibition. The law was adopted by a referendum on May 26, 1908, the vote being 113,612 to 69,416. This law prohibits not only the sale but the manufacture of intoxicating liquors. It became operative January 1, 1909."

Kentucky, pp. 196, 197.

"Notwithstanding the very large investment her people had made in the manufacture of liquors, Kentucky began early to restrict and outlaw the licensed saloon. Between 1871 and 1891, 25 counties were given county Prohibition by special acts of the Legislature. Since that time the people of the several counties have confirmed these legislative acts by voting under the local option laws, which from time to time have been enacted by the Legislature."

"More than 96 per cent. of the area of Kentucky is now dry and about 80.8 per cent. of the population live in no-license territory."

Arrests for drunkenness furnish another rough index of the consumption of alcoholic beverages. The average number per hundred thousand population is over twice as great in the twelve cities having high cancer death rates as in the twelve with low rates. (Table 6.)

The cities with highest death rates from can-

cer at the present time are notoriously lax in the enforcement of prohibition. Take for example, San Francisco, which differs chiefly from Oakland, Berkeley and Alameda, located across the Bay, in the more dissipated habits of its population. Boston and New York have failed notably in the enforcement of prohibition; Bal-

the foods easily obtained in their new homes, may be the sources of stomach troubles which ultimately develop cancers. An examination of the percentage distributions of Boston shows that the largest proportions of cancers of the stomach were found in groups whose dietary habits differed most from those common in the

TABLE 6. ARRESTS FOR DRUNKENNESS IN RELATION TO CANCER DEATH RATES

A - TWELVE CITIES WITH HIGH CANCER DEATH RATES.

City	Adjusted Rate, 1924 Cancer deaths per 100,000.	Average annual arrests for drunkenness per 100,000 inhabitants.	
		Wet period 1913 - 1916	Dry period 1920 - 1923
Average,-----	132.5	3052.5	1837.7
San Francisco,-----	144.9	3017.1	1019.4
Saint Paul,-----	144.8	1497.2	1475.1
Boston,-----	138.2	7785.9	4345.8
Spokane,-----	135.7	1755.0	1677.6
Omaha,-----	132.7	1687.9	2155.5
New Haven,-----	131.8	2689.2	1627.9
Portland, Oregon,---	130.3	2212.6	1184.7
Worcester,-----	129.5	3254.4	1951.0
New Orleans,-----	128.0	3114.6	1892.7
Minneapolis,-----	125.6	1919.2	1455.7
New York,-----	125.0	3527.0	1396.4
Hartford,-----	123.6	4169.2	2471.1

B - TWELVE CITIES WITH LOW CANCER DEATH RATES.

Average,-----	95.7	1385.7	622.2
Cincinnati,-----	102.1	503.4	176.2
Cleveland,-----	100.2	151.7	449.1
Kansas City, Mo.,---	99.2	2750.8	430.6
Camden, N. J.,-----	99.2	1766.6	1211.4
Lowell,-----	96.5	3118.1	1724.0
Houston,-----	94.4	888.8	596.6
Richmond, Va.,-----	93.5	1179.6	1342.1
Grand Rapids,-----	90.6	1173.4	730.2
Reading, Pa.,-----	89.3	735.7	423.1
Louisville,-----	89.0	1630.1	924.1
Toledo,-----	88.4	862.8	804.4
New Bedford,-----	82.4	1841.3	964.2

timore and New Orleans are at the center of "wet" spots in regions with a general tendency to restrict the use of alcoholic beverages. These great cities show excesses of deaths from cancer which cannot be charged to differences in climate, or racial stocks, since cancer rates often are much lower in neighboring communities.

Difficulties which the foreign-born meet when they attempt to adjust earlier dietary habits to

United States. Thus the Baltic, Russian-Polish, Scandinavian and Italian, in the order named, had high percentages of cancer of the stomach. These people had become accustomed to national dietaries radically different from foods commonly offered in American markets. A selective process through generations results in the development of well-balanced diets adapted to the climate and habits of each country. Only a

bare beginning has been made in the efforts to assist the foreign-born to make necessary readjustments. Studies made under the writer's supervision, observation in several large cities during varied experiences in social work, and conferences with experts in charge of the diet clinic of the Boston Dispensary, suggest that here is another fruitful field of research for those seeking to discover variations in physical habits related to cancer mortality.

Dietary habits may be responsible also for the irritations giving rise to the cancers of the peritoneum and intestines which cause deaths in Boston with a frequency slightly less than half that of cancers of the stomach. The percentage distributions show that residents of Boston are more subject to cancers in this part of the body than those of the country at large, and indicate also that natives are attacked in this part of the body with relative frequencies greater than those of the foreign born. Statistical studies showing differences between vocational groups or between urban and rural populations are needed in order to discover whether variations in physical activity or dietary habits are associated with cancers in these locations.

Another possible explanation of variations in cancer mortality is suggested with much reluctance because it cannot be reinforced by an array of statistical data. The writer tried to keep an open mind during numerous conferences with relatives and friends of persons recently deceased from cancer. The probable emotional depression which preceded the development of the cancers was a conspicuous factor in many cases. Elderly widows living with, and dependent on, an alien generation of differing habits, lonely old men in the overcrowded homes of daughters or sons, single women with few interests and no resources, were common among the cancer victims, although there were others who appeared to have happier lives. Possibly the stomach troubles, or even the loss of control over cell multiplication in other parts of the body, may be traced, in part at least, to glandular atrophy associated with these long-continued emotional depressions.

CANCERS OF THE FEMALE BREAST AND GENITAL ORGANS

Only meager returns resulted from the efforts to discover physical habits which may be responsible for variations between native and foreign stocks in numbers of women who suffer from cancers of the breast and genital organs. Surviving relatives and friends could or would tell but little about habits which may have caused the irritated conditions preceding cancers. There were many histories of bruises or falls, but it was impossible to judge whether these were merely recalled in the efforts to rationalize the histories of the disease. There was a general unwillingness to admit that there were inherited

or family tendencies to cancer. Testimony from physicians as to variations between nationality groups in the extent and consequences of contraceptive practices was contradictory and inconclusive. Returning to our percentage distribution as possible indications of results of differing habits, it may be worth while to note that the native-born and Latin groups in which the women are generally supposed to resort most freely to birth control were also the ones in which cancers of the genital organs occurred with greatest relative frequency.

SUMMARY OF CONCLUSIONS

The study of local variations in cancer mortality, which appear consistently in the vital statistics of all countries with well-developed medical services, may reveal conditions promoting the tendency to cancerous growths. An examination of the mortality statistics of the registration area of the United States reveals such variations, and arrays, by adjusted cancer death rates of these states, indicate that the factors influencing these differences are operating from year to year in a consistent manner. An attempt to discover possible correlations between these variations in cancer mortality and remote racial origins, similar to the anthropological studies of the Cancer Sub-Committee of the League of Nations Health Organization, would be futile in the United States, because of the hybrid character of the population and of the absence of suitable statistics.

The study substitutes an examination of variations between foreign-born stocks and the portion of the population subject to American living conditions for not less than two generations. High correlations between adjusted cancer death rates and percentages of these two population groups are evident when the statistics of the registration area are studied. Cancer death rates increase wherever there are large groups of foreign-born who have reached the ages subject to the disease. This increase is notably conspicuous when there is a large older immigrant population (Irish and German for example) of racial stocks peculiarly subject to the disease.

Physical habits rather than racial origins are emphasized as the probable causes of these variations. Differences between nationality groups in the manifestations of the cancerous tendency are presented in percentage distributions by locations of fatal cancers of persons of different countries of origin who died in Boston during a four-year period. Since over half of the cancers attacked the alimentary tract, dietary habits were studied as offering the most probable explanation of the differing incidence of the disease. The greater use of alcoholic beverages was discussed as the chief difference in the diet of the native and foreign populations of the

United States. It was shown that states with long records of restriction in the sale of alcoholic beverages have low cancer death rates, and that cities with high rates of arrests for drunkenness have exceptionally high cancer death rates, although climatic and racial factors may be similar to those of neighboring communities with much lower rates. It was suggested also that

the difficulties which the foreign-born meet when they must adjust to American living conditions the dietary habits acquired in their countries of origin, may be sources of the physical conditions giving rise to cancers. Inconclusive results were reached in efforts to relate physical habits to other variations between nationality groups in the manifestations of the disease.

A TYPE OF PLASTER SPICA USEFUL IN THE CONVALESCENT TREATMENT OF FRACTURES OF THE FEMUR

BY AUGUSTUS THORNDIKE, JR., M.D.

THE use of plaster in the treatment of fractures of the femur has long been in vogue, but the type described and illustrated in this article is both novel and useful. Having seen this applied in the Maria Hospital, Stockholm, Sweden, it seemed to the author to be an ideal form of

knee-joint and yet provides sufficient fixation to safeguard a healing callus. The patient can be readily handled in bed by the nurses and, in general, is perfectly comfortable and interested in the increased daily motion of the knee-joint.

The apparatus is simple in construction and is applied with the hip and knee each in ninety

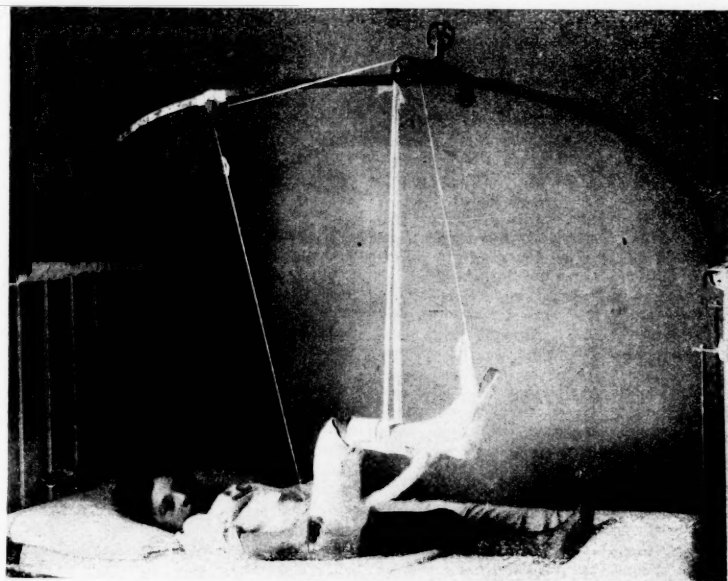


FIGURE I

apparatus for the convalescent treatment of fractures of the femur following the removal of skeletal traction. It has been used in the Surgical Service of the Children's Hospital, Boston, Mass., and, I think, recognized as a plaster spica particularly adaptable to children. It permits motion, both passive and active, of the

degrees flexion. First, a firm coaptation plaster is applied to the whole thigh; then a plaster gutter, extending from the ischial tuberosity to the tip of the toes, is made and fitted; finally, a supporting rope is run from the mid-portion of the gutter on the lower leg to the posterior aspect of the plaster coaptation of the thigh. The

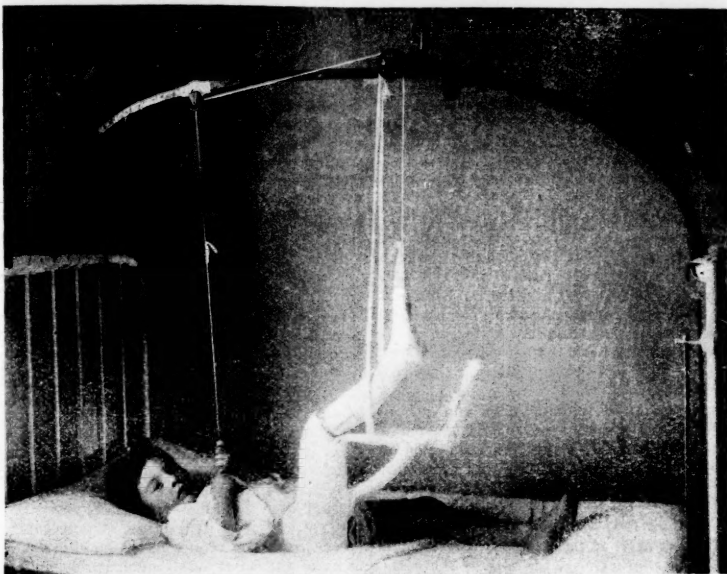


FIGURE II

spica is then completed from the lower costal margin to the knee and when set, the apparatus is complete.

The use of a stocking fastened with broad adhesive plaster to the skin of the lower leg and

to the toe of which a tape is sewed, (the tape being run overhead through the pulleys of a Balkan or Rainbow Frame to the hand of the patient) makes simple the early stages of inception of passive motion.

THE PATHOGENESIS OF CHRONIC BRONCHITIS AND ITS TREATMENT WITH QUININE DERIVATIVES*

BY G. P. GRABFIELD, M.D.

In 1923 there came to the writer's attention certain new drugs said to possess specific streptococidal properties and reported in German journals to be useful in the streptococcus types of pneumonia and grippé. These drugs are closely related to the ethylhydrocuprein recommended for the treatment of pneumonia under the name "Optochin." The drug chiefly used in this study was iso-amylhydrocuprein, called "Eucupin" by the manufacturers. The doses ranged from 0.050 to 0.200 gms., three times a day, after meals. Inasmuch as various workers in the field have contended that chronic bronchitis represents a chronic streptococcal infection, it seemed worth while to try these drugs on a group of cases.

Two difficulties immediately presented them-

selves. It was found that authorities disagree upon the exact definition of chronic bronchitis, and that there is no criterion other than the patients' statements as to the success or failure of any given form of therapy. At the outset it was planned to use only those cases referred from Dr. Walker's asthma clinic which had had little or no relief from vaccine therapy. Later, however, other cases came into the clinic. In all, about one hundred cases were treated, but of these only one-third seemed to the author of sufficient credibility to warrant the publication of any results based on their statements. In connection with this study it was found that the symptom complex and natural history of chronic bronchitis was unavailable in the texts consulted, and it seemed worth while to work this out along with the results of the therapy. Incidentally, some of the statistics obtained, such

*From the Medical Clinic of the Peter Bent Brigham Hospital, Boston.

as age, nativity, etc., gave some indication as to whether the thirty selected as the basis for this study were a fair sample of the total, and this was found to be the case.

In the last analysis, one is forced to conclude that this diagnosis would be more accurate if it were called "cough, cause undetermined." The cases studied were almost all of long standing and none had, at any time, shown tubercle bacilli in the sputum. All had at least two examinations.

The general questions as to sex and nativity of these patients revealed no predilection for either sex or for any race. The sexes were approximately equally represented in this group (14 males and 16 females) and the birthplace of those studied runs roughly parallel to the admissions to the hospital. The average duration was eleven years and the average age when seen was fifty. From this, it would appear that the average age at onset was thirty-nine or forty.

The type of onset was insidious and unconnected with any known infection in eleven of these cases. By far the largest number came on with a cold (14), while four followed asthma of long standing and one patient dated the onset from measles.

Pain was not frequent, but four (13%) complained constantly of pain in the chest. This pain was not characteristic, in any of the cases, either as to location, type, or radiation. There was nothing peculiar in the distribution of lesions or symptomatology of this group to account for this symptom. It seems worth noting, however, that four patients out of the thirty complained of pain.

The same number had, at times, a blood streaked sputum. Such sputum is often considered pathognomonic of tuberculosis, but particularly careful study of these cases revealed no clinical or x-ray evidence of tuberculosis.

It is worthy of note, that although many of the patients were of the spare rather than the obese type, only four associated a loss of weight with their cough.

The physical signs varied a great deal, not only from patient to patient, but in the same patient. At times a physical examination of the chest showed no deviation from the normal; at other times the signs were slight. We were surprised to find relative dullness at the apices in thirteen cases. In seven of these, x-ray examination showed cloudiness over the dull apex. This dullness was often accompanied by localized râles and slight changes in breath sounds. The râles, however, tended to be of the coarser and musical types. A third of the cases showed no râles at any visit in which they were examined. Nearly a third showed no recognizable x-ray changes. It should be emphasized at this point that those cases with apical signs were particularly carefully studied for tuberculosis, but this diagnosis could not be made.

The treatment of this group of conditions has always been unsatisfactory. The action of sputum vaccines is admittedly variable in most hands. As was said in the introduction to this paper, this work was begun with the idea of finding out the effect of the hydrocupreins on such coughs. This was tried out in twenty-two cases. Of these, ten seemed to be improved, seven were not improved, in five the improvement was doubtful. Of the ten, two apparently were cured. It would seem, from subsequent experience, that quinine bisulphate is just as efficacious as is "Eucupin." The percentage of "cures" and improvements considered statistically is almost identical with what one would expect, if nothing had been given. However, in some of the cases very startling improvement seemed to follow immediately upon the administration of quinine and its derivatives so that until something better is offered, it is probably justifiable to include this drug in doses of five grains, three times a day, amongst those being used in these very stubborn conditions.

It has been said that all these chronic coughs are due to cardiac insufficiency. For this reason, ten cases were selected at random and treated with digitalis. Of these, two were improved, and it is interesting to note that these two were the only ones in which slight enlargement of the heart was demonstrable by percussion.

Almost all these patients had foci of infection, some of which were removed. In two cases improvement seemed to follow removal of infected teeth or tonsils. However, as far as the effect on the cough was concerned, there seemed to be no result from removal or other treatment of focal infection about the head.

It seems to me that the important question before us, particularly in this section of the country, is that of the prevention of this condition, inasmuch as, at present, its treatment with vaccine, drugs or otherwise is so unsatisfactory.

From this study we have learned that the vast majority of these cases begin late in the fourth decade with a "cold that hangs on." For the present, therefore, it would seem important to pay considerable attention to the treatment of colds, particularly at this period of life, and to the elimination of chronic infections at or before this period. The treatment of colds is, in its turn, largely preventive and definite active therapy is not at present available. However, one point that was revealed in a few of the patients who were able to go into the hospital wards for a short period may be worth considering. Practically all of these felt definitely better and the amount of sputum decreased strikingly after a period of bed-rest. Is it possible or feasible to treat stubborn colds, particularly in the age period mentioned, by means of bed-rest with a thorough removal or treatment of infections in the upper respiratory tract? Such a radical

proposal merits long consideration before being applied.

The author has happened to see in his private work a patient who illustrates the development of chronic bronchitis in accordance with the outline set forth above. It seems worth while to recapitulate briefly the case history as an illustration of the possible pathogenesis of this condition.

This woman, a housewife of 37 years, previously in perfect health, was first seen on Dec. 8, 1924, having had, three weeks previously, the prevailing "grippe" with nausea and diarrhoea. She thought she recovered and went out of town to visit. On Dec. 4, 1924, she "caught cold" and had a cough for four days with chilly sensations, without sputum but with a sensation of "scrapiness" in the left chest over the hilus region. She lost ten pounds in the three weeks she was ill. A physical examination showed no evidence of disease in the chest. From Dec. 9, 1924, to Jan. 28, 1925, she was kept at home in bed. She would ordinarily not have been kept in bed except that she persisted in having an evening temperature as high as 99.8 and during this period she had a number of atypical asthmatic attacks which she called periods of "wheezes." It should be noted parenthetically that she knows what true asthma is, inasmuch as a relative has it. Five careful physical examinations of the chest showed a few sonorous and large, moist, scattered, inconstant râles on only two occasions and she continued to complain of a peculiar sensation in the skin area corresponding to the left hilus region. Repeated examinations of the sputum were negative for tuberculosis.

On January 28, she had an x-ray examination which showed no evidence of tuberculosis and the comment by Dr. L. B. Morrison was "there is slight hilus thickening but no dense areas. The apices are clear. The total increase from normal is but slight."

It is worth noting that she weighed on January 28 exactly the same as she did on December 8. On July 21, 1925, she had the prevailing summer cold and on examination of the chest at this time one sibilant râle was heard at the right base and one at the left which disappeared on continued breathing. On Sept. 15, 1925, although she still complained of the same sensation in the left chest, a careful physical examination revealed no deviation from the normal. X-ray examination on Sept. 16, 1925, showed

a small calcified gland in the right hilus and slight peribronchial thickening towards the base on the right and the total increase from normal was judged to be extremely slight. In November, 1925, she again had a cold and at this time there was a rare sonorous râle on both sides. Following this she was feeling quite well, when suddenly one evening she had a shaking chill with a rise in temperature to 102.6°. At this time the respiration rate was 24, and there were a number of medium to coarse, moist râles scattered through both chests, but no definite signs of consolidation. The temperature on the following day fell to 99.2° and the following day was normal. However, the third day she had considerable cough and sputum. Following this she was given a stock vaccine, prepared by Dr. I. C. Walker, from which she had several local and general reactions. In December, 1926, she had a slight sore throat, which rapidly cleared up, and at this time her chest showed no râles, although she still had sensation over the left hilus. She was last seen in May, 1927, up to which time she had had a constant dry cough, with occasional sputum. The chest was absolutely clear. It seems hardly necessary to add that the heart, abdomen, blood and urine examinations throughout showed no evidence of pathology elsewhere.

It is my belief that this patient pictures vividly the development of so-called chronic bronchitis.

SUMMARY

1. Out of one hundred cases of chronic bronchitis treated in a special clinic, thirty have been selected for a study of the pathogenesis of bronchitis and of the effect of quinine and certain of its derivatives on this condition.
2. It is evident, from this group, that these streptococcal drugs are not specific for all cases of chronic bronchitis, but in a very few, considerable improvement followed immediately after administration.
3. The usual onset of chronic bronchitis is with a prolonged upper respiratory infection late in the fourth decade, and the best hope for therapy lies in the extremely conservative treatment of the upper respiratory infections occurring at this period.

AN HISTORICAL REFERENCE TO THE USE OF LIVER IN THE TREATMENT OF DISEASE

BY L. C. STRONG, PH.D.

In view of the interest aroused by Minot's and Murphy's discovery of the strikingly beneficial results to be obtained from the use of a diet rich in liver in the treatment of pernicious anaemia, it seems appropriate to note a statement appearing in the "Sylva Sylvarum" or "A Naturall Historie" written by Francis Bacon. The following paragraph is taken from page fifteen of the second edition (1635). The italic letters of the original are omitted since the use of them had nothing to do with the meaning expressed.

"We have spoken of Evacuating of the Body: we will now speak something of the Fitting of

it by Restoratives in Consumptions, and Emicuating Diseases. In Vegetables, there is one part that is more Nourishing than another, As Graines, and Roots nourish more, than the Leaves; In so much as the Order of the Foliantes was put downe by the Pope, as finding Leaves unable to nourish Mans Body. Whether there be that difference in the Flesh of Living Creatures, is not well inquired: As whether Livers, and other Entrails, be not more Nourishing, than the Outward Flesh. We find that amongst the Romans, a Gooses Liver was a great Delicacy; In so much as they had Artificiall Meanes to make it fair, and great; But whether

it was more Nourishing; appeareth not. It is certaine, that Marrow is more Nourishing than Fat. And I conceive that some Decoction of Bones, and Sinewes, stamped and well strained, would bee a very Nourishing Broth; Wee finde also that Scotch Skinek (which is a pottage of strong Nourishment) is made with the Knees, and Sinewes of Beefs, but long boiled: Jelly also, which they use for a restorative, is chiefly made of Knuckles of Veale. The Pulp that is within the Crafish or Crab, which they spice and butter, is more Nourishing than the Flesh of the

Crab, or Crafish. The Yolkes of Eggs are clearly more Nourishing than the Whites. So that it should seeme, that the Parts of Living Creatures, that lye Inwards, nourish more than the Outward Flesh: Except it bee the Braine; which the Spirits prey too much upon, to leave it any great Vertue of Nourishing. It seemeth for the Nourishing of Aged Men, or Men in Consumptions, some such thing should be Devised, as should be halfe Chylus, before it be put into the Stomach."

SPONTANEOUS AMPUTATION OF APPENDIX

BY ROBERT J. KIRKWOOD, JR., M.D.

S. B., female, aged 38, entered the Boston City Hospital November 19, 1926, on the Surgical Service of Dr. David D. Scannell. She was admitted through the Out-Patient Department, with a diagnosis of chronic appendicitis. For several years she had been subject to occasional attacks of right lower quadrant pain, never very severe. She had felt nauseated during several attacks, but had never vomited. One month before entry she had had an attack more severe than any previous, which necessitated her staying at home.

Physical examination showed a thin, ptotic female of 38, complaining of vague, dull pain in the right lower quadrant. Deep palpation elicited tenderness and no spasm. The temperature never rose above 99.5. The white count was 9000, the urine negative at several examinations. As the patient had been constipated for years, systematic purging was carried out for four days with good results, but with no relief from symptoms.

Operation was performed five days after entry and

at the patient's request. A three-inch, low, right rectus muscle splitting incision was made, the peritoneum opened and the caecum delivered without difficulty. The caecum was free, easily movable, and there were no adhesions. The teniae were followed down to the base of the caecum, but the appendix could not be located. On closer inspection of the base of the caecum, the three teniae were seen to converge smoothly.

Further digital examination of the right lower quadrant delivered an appendix 2 cm. long, entirely free from any connection with the caecum.

The appendix was slightly injected, closed at both ends and attached by a mesentery. Dr. Mallory, pathologist, was sent for. In the meantime the mesentery was clamped, tied and cut. Gross examination disclosed a tubular structure moderately edematous, which the pathologist stated to be an appendix. The operation was finished, the patient had a normal convalescence for twelve days and was discharged relieved. The microscopic report of the specimen was chronic and healing appendicitis.

MEDICAL PROGRESS

PROGRESS IN SYPHILIS, 1926

BY AUSTIN W. CHEEVER, M.D.

THERE was during 1926 a rather large number of articles on the subject of syphilis, but little really new. Less is being written about bismuth as the indications for the use of this drug have become fairly well established. Tryparsamide and the malarial treatment of neurosyphilis are having much attention. From the serologic point of view there has not been much advance. There has been worked out a new test which has certain definite advantages over the Wassermann reaction. Kline and Young (*J. A. M. A.*, 86:928, March 27, 1926) describe a microscopic slide test for syphilis with Kahn's antigen which they find as sensitive as the routine three-tube Kahn test and with the advantages of being simpler, of requiring less apparatus and much less serum, and of being easier to read. (It is necessary to refer to the original article for technical details.) A close agreement has been found in

the results between the microscopic slide precipitation, the Kahn, and the Wassermann tests. This new test is particularly useful when only small quantities of serum are obtainable and for quick testing for syphilis before emergency transfusions.

Kline, Littman, and Mill (*Am. J. Syph.*, 10:636, Oct., 1926) present the result of their study of over two thousand microscopic slide precipitation tests for syphilis. They find that the test agrees well with the clinical condition of the patients, and with the Kahn and Wassermann, and that it is more sensitive than the latter early in syphilis and in treated cases.

W. A. Hinton (*Boston M. & S. J.*, Jan. 7, 1926) finds the Kahn test especially serviceable in testing hemolyzed specimens. He considers it an easy and sensitive test, but probably erring on the side of the false positive, particularly in pregnancy.

S. Greenbaum (*J. A. M. A.*, 86:1273, April 24, 1926) found an agreement between the Kolmer and Kahn tests in from 96 to 97 per cent. of cases. He advises that both be used together as false positives or false negatives are likely to be corrected in the other.

Rosen and Drasnoff (*Arch. Dermat. & Syph.*, 13:506, April, 1926) found the blood cholesterol low in one hundred per cent. of a group of patients with untreated primary syphilis; in 50 per cent. of the untreated secondary, and in 25 per cent. of the untreated tertiary cases. After treatment the cholesterol content returned to normal or above normal in all primary cases and in most of the later ones. The cholesterol content was high in 60 per cent. of the pregnant syphilitic women, normal in 35 per cent., and low in 5 per cent.; low, also, in two congenital syphilitic infants. It was normal in 82 per cent. of treated congenital syphilis.

An editorial in the *Journal of the American Medical Association* (*J. A. M. A.*, 86:1701, May 29, 1926) calls attention to the possibility of contracting syphilis from the cadaver, quoting instances: Koch reported on the infection of a rabbit with tissues taken from a cadaver three days after death; Kratzeisen found that spirochetes from cadavers lived longer when kept in bile than when kept in other fluids, suggesting that the liver may be most liable to cause infection; Hoffman has recently collected nine certain, and seven probable, cases of this sort from the recent literature. He shows that post-mortem multiplication of the spirochetes takes place in macerated fetuses and in the bodies of infants who have died with congenital syphilis. Motility of the organisms is retained from twenty-four to thirty-six hours, and staining reactions for many days.

Milan Kitechevatz (*Ann. de dermat. et syph.*, 7:332, June, 1926) made 339 local Wassermann tests with serum from primary lesions from 215 patients. He did not find the tests satisfactory, specific, or sensitive, and does not recommend it for a method of early diagnosis. [This observation is in marked disagreement with the work of Klauder and Kolmer.]

Earl D. Osborne (*Arch. Dermat. & Syph.*, November, 1925) considers the colloidal benzoin test superior to the colloidal gold in ease of performance, uniformity of result, reliability, and amount of information furnished. There is evidence that precipitation in the first zone is an index of the amount of active involvement of the parenchyma of the brain, and that purely vascular, meningeal, or spinal cord lesions produce second zone precipitation. The author concludes that it should be valuable in differentiating general paresis from other forms of neurosyphilis.

R. B. Lloyd and Rai G. C. Mitra Bahadur (*Indian J. M. Research*, 15:135, July, 1926) found 14 per cent. of malaria patients with

positive Wassermann reactions, a percentage which they consider well within the syphilis rate of the Calcutta Hospital population, and conclude, therefore, that malaria, unless accompanied by syphilis, does not cause a positive Wassermann reaction.

EXPERIMENTAL SYPHILIS

Jay F. Schamberg and Anna M. Rule (*Arch. Dermat. & Syph.*, 14:243, September, 1926) show that it is possible to prevent the development of syphilis in rabbits by giving them a series of baths at a temperature of 113 F. within three to four days after inoculation. As the rabbit's temperature is higher than that of the human, this indicates a rise of 4 F. The baths were from fifteen to twenty minutes each, and the number necessary appeared to be about nine, though it was not definitely determined. Infection of the rabbit could be prevented, they found, by heating the suspension of spirochetes to 104 F. for one hour before inoculation, though the thermal death point for the *Spirocheta pallida* outside the body is about 105.8 F. continued for six hours. The authors feel that it does not necessarily follow that this observation can be applied to human syphilis.

Louise Pearce and Chester M. Van Allen (*J. Exper. Med.*, 43:297, 1926) inoculated rabbits with the *Spirocheta pallida* after removal of thyroid or thymus glands. After complete thyroidectomy the disease was considerably more severe than in the controls, but partial thyroidectomy resulted in milder disease. The effect of thymectomy in general resembled that following partial thyroidectomy. They conclude that the integrity and balance of the endocrine glands play an important role in the mechanism of defense against syphilis.

PATHOLOGY

Eli R. Saleeby (*Am. J. Syph.*, 10:215, April, 1926) studied microscopically testes from forty syphilitic subjects. Twenty-three cases showed pathologic changes commonly attributed to the *Spirocheta pallida*. In seventeen of these twenty-three cases the Wassermann reaction was positive; in two, negative; in four, not made. The Levaditi preparations were negative in all the cases except that of a seven months' fetus. Attempts at rabbit inoculation from eight cases failed. The study shows the frequency of the disease in the testes and the difficulty of demonstrating the organism in the tissues.

EARLY SYPHILIS

Charles C. Dennie (*Am. J. Syph.*, 10:205, April, 1926) reports an interesting group of recurrent early syphilides, and especially warns against early insufficient treatment, too small doses of arsphenamine, or excessive use of the same as compared with mercury.

Shelmire and Calhoun (*J. A. M. A.*, 86:1428,

May 8, 1926) report two cases of generalized leukoderma which followed a macular syphilid. The authors satisfied themselves that the depigmentation came at the sites of former macules. Repigmentation eventually occurred.

Wile and Belote (*Arch., Dermat. & Syph.*, 13:495, April, 1926) report on thirty-seven cases of syphilitic alopecia. They find two types: that occurring without visible syphilides, and that in which the loss of hair is apparently due to papular or other lesions of the scalp. In the former type the hairy system of the entire body, including the lanugo, shows the alopecia. This essential type is associated with meningeal syphilis in a high percentage of cases as shown by spinal fluid findings, and is probably due to endocrine dysfunction, resulting from involvement of the autonomic nervous system. Symptomatic alopecia represents a much smaller group, the authors think, and appears to be caused by perifollicular change; therefore a true syphilid.

LATE SYPHILIS

Clement H. Marshall (*J. A. M. A.*, 85:875, Sept. 19, 1925) describes a case of elephantiasis of the scrotum where the diagnosis was made by history, positive Wassermann reaction, microscopic examination, and therapeutic tests.

Under the title of "The Menace of the Slightly Positive Wassermann Reaction," J. H. Mitchell (*J. A. M. A.*, 87:1351, Oct. 23, 1926) states that as a result of the widespread venereal disease propaganda, syphilophobia has increased greatly. The laity has learned to regard laboratory tests as infallible, he says, while many members of the profession are also unthinkingly doing the same, willingly accepting a one or two plus Wassermann reaction as unmistakable evidence of syphilis. This incorrect interpretation of the Wassermann reaction, he feels, leads to various tragedies and unnecessary worries amounting to syphilophobia.

NEUROSYPHILIS

H. C. Solomon (*Am. J. Syph.*, 10:96, January, 1926) analyzes the history of pregnancy in 559 syphilitic women thirty years of age or older who had been admitted to the Boston Psychopathic Hospital. About 44 per cent. of the women with paretic and tabetic neurosyphilis had never been pregnant as compared with 26.5 per cent. of women with syphilis who had no evidence of nervous system involvement. He believes that pregnancy develops a protection against the attack of the spirochete upon the nervous system.

It has often been stated that central nervous system and skin involvement in late syphilis are mutually exclusive, however, Prokoptschuk (*Arch. f. Dermat. u. Syph.*, 150:261, May, 1926) found syphilitic skin or bone diseases in 10.32 per cent. of cases with syphilis of the nerv-

ous system. Among 16 cases of tabes dorsalis which showed no clinical evidence of skin or bone changes, roentgenologic examination showed osteitis in five.

O'Leary, Goeckerman, and Parker (*Arch. Dermat. & Syph.*, 13:301, March, 1926) report that of a group of patients with frank paresis treated with malaria 25 per cent. showed such complete remissions that they were able to return to their former occupations; thirty-seven per cent. were definitely improved; two died, one as a result of malaria and the other six months later in convulsions. There was no effect on optic atrophy, gastric crises, lightning pains with negative serologic findings, or asymptomatic neurosyphilis. The use of arsphenamine, mercury, or tryparsamide immediately after the malaria was attended by definite evidence of relapse from remission.

G. Bosch and A. Mo (*Semana med.*, 1:25, January 7, 1926) report that under malarial treatment for general paresis about 17 per cent. of their patients have been able to return to business for at least two years; 30 per cent. have returned to ordinary home life; 21 per cent. failed to show benefit.

R. Unger (*Med. Klin.*, 21:1499, 1925) reports that two pregnant women with such severe dementia that abortion seemed necessary were treated with malaria and improved so much that intervention became unnecessary. He believes that malaria will not cause abortion.

M. Nonne (*Med. Klin.*, 21:1829, 1925) from a study of 450 cases of paresis and 30 of tabes considers that he has secured good results in about 30 per cent. of the cases treated with malaria. Results in the treatment of tabetics have not been as encouraging.

Cheney and Warner (*The State Hospital Quarterly*, 11:603, 1926) consider this form of treatment worth while, and feel that even if remissions are not obtained, sufficient improvement may occur so that patients are less difficult to care for, resulting in economic benefit to the hospital. They do not believe that malarial treatment causes more rapid deterioration and death after a period of improvement.

Driver, Gammel, and Karnosh (*J. A. M. A.*, 87:1821, Nov. 27, 1926) feel that their results warrant the use of malarial therapy in selected cases of neurosyphilis.

L. M. Green (*The State Hospital Quarterly*, 11:618, 1926) considers this the most satisfactory method of treatment for institutional cases. He reports 26 per cent. complete remission, 12 per cent. partial remission, 22 per cent. improved. Percentage of improvement was greater in men than in women and the shorter the duration of the disease, the better the prospects for remission, he feels.

George H. Kirby (*The State Hospital Quarterly*, 11:559, 1926) states that about one-third of the general run of paretic patients admitted

to mental hospitals attain complete remission under malarial treatment, and regain capacity to work; another 10 to 15 per cent. show improvement. He feels that tryparsamide may cause a similar percentage of cases to improve. General paresis and tabes represent, he emphasizes, the failures in the treatment of early syphilis.

David Cochran (*The State Hospital Quarterly*, 11:587, 1926) reports favorably on the use of malaria and states that he has found very few paretics where this method of treatment is contraindicated. With care, he feels that very few untoward symptoms occurred that could not be satisfactorily managed.

Adelheim (*Urol. & Cutan. Rev.*, August, 1926) gives the pathologic findings in five cases of death following the malarial treatment of general paresis. Two showed rupture of the spleen, due, the author thinks, to a lack of elasticity produced by syphilis. In all five cases death occurred in the febrile stage; accentuation of the inflammation in the cortex of the brain was found in all. Selection of patients for this treatment is advised as it is contraindicated when the general condition is poor.

Wagner-Jauregg (*Wien. med. Wochenschr.*, July 17, 1926) is enthusiastic about malarial treatment of general paresis when started very early. In patients too weak for malarial inoculation or when the treatment seems to be of no further benefit, he uses relapsing fever inoculation caused by *Spirocheta duttoni*. After an incubation period of five or six days, the patient has from four to six febrile attacks at intervals of a few days to a few weeks. The temperature is lower than with malaria but it lasts longer. Relapsing fever cannot be interrupted, but stops spontaneously, leaving an immunity so the treatment cannot be repeated. It appeared to be less severe than malaria and caused no fatalities. The remissions seem as complete and as long as with malaria. The author suggests the use of malaria as a prophylactic after eight years or more of syphilis with persisting positive spinal fluid reaction. He says, also, that it is of value in the preataxic stage of tabes.

Solomon, Berk, Theiler, and Clay have given a preliminary report (*Arch. Int. Med.*, 38:391, September, 1926) on the use of sodoku (rat bite fever) in a small number of cases. Inoculation with this disease has some advantages, they think, over the use of malaria in that it is more safely handled, and the organisms can be maintained in laboratory animals, thus obviating the need of transmitting the disease from patient to patient as with malaria. Sodoku is said to be self limited but often continues with febrile exacerbations for several months without treatment. Mortality is extremely low but it should be nil because of complete control by

arsphenamine. It may be used for patients who are immune.

CONGENITAL SYPHILIS

Philip H. Sylvester (*J. A. M. A.*, 87:298, 1926) from large experience with sulpharsphenamine intramuscularly has found this drug as effective as neoarsphenamine intravenously in causing disappearance of the lesions and reversal of the Wassermann reaction in early syphilis. In late cases it appeared to be as effective in clearing up the lesions and more effective in reversing the Wassermann reaction.

Dorne, Brams, and Trumpeer (*J. A. M. A.*, 86:267, Jan. 23, 1926) demonstrated lowered gastric acidity in a group of congenital syphilitic children, thus confirming Neugebauer's earlier report.

TREATMENT: ARSPHENAMINE GROUP

Yampolsky and Klugh (*J. A. M. A.*, Georgia, 15:1, 1926) studied the intraperitoneal injection of neoarsphenamine and mercurosal in rabbits. There was neither peritonitis nor adhesions. No bad effects clinically or by x-ray and fluoroscopic examinations were shown in human beings with this method. The authors believe that this treatment is valuable in children whose veins are not accessible.

Voegtlin and Dyer (*U. S. Public Health Service*, Jan. 21, 1927, pp. 176-186) found that sterilization of syphilitic rabbits late in the disease can be accomplished by a single large dose of arsphenamine, neoarsphenamine, or sulpharsphenamine; that the minimum sterilization dose of all drugs is identical in terms of absolute amount of arsenic in the form of arsphenamine intravenously. They found that the "index of sterilization," the ratio of maximum tolerated dose to minimum sterilization dose, was most favorable in the case of sulpharsphenamine, less so with neoarsphenamine, and least with arsphenamine.

The apparently successful prophylactic use of arsphenamine in patients who have been exposed to known syphilis has been reported several times. Richard L. Sutton (*Arch. Dermat. & Syph.*, 13:822, June, 1926) has given an account of one failure in a patient who received one injection of 0.45 Gm. neoarsphenamine forty-eight hours after exposure to her husband who had a primary lesion. She moved away and did not continue the treatment. Six weeks later she returned with secondary syphilis, denying any other possible exposure.

John H. Stokes (*J. A. M. A.*, 86:840, March 26, 1926) found that the taste or odor of neoarsphenamine could be prevented if the patient ate a wintergreen or clove wafer during the administration of the drug.

STOVARSOL

Beutl (*Dermat. Wochenschr.*, April 8, 1925) reported his experimental results with stovarsol

given by mouth in syphilis in seven fresh cases with primary lesions. In two of these cases it was necessary to stop stovarsol because of its inefficiency; in one case spirochetes were present after six days' medication with 5 Gm. of stovarsol and the lesion remained unchanged, while one injection of bismuth caused the spirochetes to disappear and the sore to heal. In another case the sore was unchanged after twenty-two days following the use of 22 Gm. of stovarsol. The other cases healed slowly with this drug. Some patients with secondary syphilis showed negative Wassermann reactions from two to three months after the end of the course of 16 to 25 Gm., but the Wassermann usually became positive later. Two patients with skin gummata retained a positive Wassermann reaction for four months after a course of 20 Gm. but the lesions healed satisfactorily. The author recommends this drug in cases in which arsenphenamine cannot be given but not for use by the laity as a prophylactic.

Allan K. Poole (*Bull. Johns Hopkins Hosp.*, 38:242, 1926) reports on the prophylactic use of this drug in experimental syphilis of the rabbit. A definite prophylactic action was apparent after a dose of 0.5 Gm. per kilogram; with the same dosage the initial lesion appeared to heal. However, the drug is toxic for rabbits, causing death of the animal within twenty-seven days with single doses as low as 0.2 Gm. per kilogram. Dr. Poole strongly advises further experimental study before it is employed in human syphilis.

TRYPARSAMIDE

O'Leary and Becker (*M. J. & Record*, March 3, 1926) reviewed their use of tryparsamide at the Mayo Clinic over a period of three years in 207 cases. They feel that it does not offer as much encouragement as malaria in the treatment of general paresis, but is available for those unable to stand the latter. They find the visual hazard (4.3 per cent.) not preventable by special precautions. They suggest the use of bismuth intramuscularly in conjunction with tryparsamide as better than the latter alone.

Louis Berg (*Am. J. Syph.*, 10:261, April, 1926) found clinical improvement from the use of tryparsamide in more than 40 per cent. of neurosyphilis patients selected only as to their susceptibility to optic nerve injury.

Cady and Alvis (*J. A. M. A.*, 86:184, Jan. 16, 1926) found that patients with optic involvement are more liable to injury by the drug than normal patients though others may show response to treatment if properly controlled. If patients with normal optic tracts have subjective dimness of vision, flickering, shimmering sensations, flashes of light, objective diminution in the visual acuity, or contraction of the visual

fields, the drug should be discontinued for at least one month.

MERCURY

Wild and Roberts (*Brit. M. J.*, 1:1076, June 26, 1926) have investigated the absorption of mercurial ointments by the skin. Under the conditions of their experiments all mercurials in all ointment bases were absorbed to some extent. Anhydrous wool fat was absorbed to a greater extent than lard, but did not carry the mercury in as well. Paraffin base was inferior. Up to 30 per cent. the amount of mercury absorbed was proportional to the amount in the ointment. Mercuric oxide was most readily absorbed but caused great irritation of the skin. Ammoniated mercury and mercuric salicylate were absorbed nearly as well. Calomel was least readily absorbed. Metallic mercury was absorbed rather less readily than the oxide but could be used in much greater concentration.

BISMUTH

Cole, Farmer, and Miskdjian (*Arch. Dermat. & Syph.*, 13:219, February, 1926) studied by the roentgen ray the absorption of insoluble bismuth injected into the muscle tissue. They found that finely divided metallic bismuth remained visible for six months. Bismuth oleate and oxybenzoic acid compound of bismuth remained for shorter periods, but no case of complete absorption was observed. Bismuth salicylate injections were absorbed in an average of thirty days; potassium bismuth tartrate in an average of fourteen days. The authors considered the use of metallic bismuth and bismuth oleate dangerous; of potassium bismuth tartrate safe; and the use of bismuth salicylate not to be recommended.

O. M. Gruhzit (*Arch. Dermat. & Syph.*, 13:195, February, 1926) made careful experimental studies of bismuth salicylate in animals. The drug was eliminated largely through the urine, he found, reaching a maximum after one dose in five days. The rate of elimination increased with the increased dosage, thereby avoiding cumulative effect. The toxicity was low, even large doses producing no loss of weight or histologically demonstrable lesions in the kidneys and liver of rabbits. In therapeutic dosage lesions were rapidly made free from spirochetes. Absolute cures were produced in all rabbits after eight to eleven injections, as shown by lymph node transfers.

B. Sparachio (*Riferma med.*, 42:989, Oct. 18, 1926) has found bismuth in the spinal fluid of practically all patients treated with it intramuscularly.

Richard L. Sutton (*Am. J. Syph.*, 9:29, January, 1926) concluded an extended and very excellent article on bismuth, first part of which appeared in the October, 1925, number. His bibliography covers eight pages.

SODIUM THIOSULPHATE

Poong King Chen (*Brit J. Dermat. & Syph.*, 28:20, 1926) found that in three out of ten cases of postarsphenamine exfoliative dermatitis to which sodium thiosulphate was given the duration was about nine days, whereas it was more than thirty-six in the seven cases not so treated. There were fever, chills, and rapid pulse when the sodium thiosulphate was not freshly prepared.

R. D. Herrold (*J. A. M. A.*, 86:413, Feb. 6, 1926) reported on the use of non-specific protein as an adjunct to treatment of Wassermann-fast cases of latent syphilis. An extract of gonococcus in physiologic sodium chlorid solution in a strength of 500 million per cubic centimeter was used. From 0.9 to 1.25 c.c. per dose was given intramuscularly at intervals of three or five days for four injections, then the

combination of neoarsphenamine intravenously and protein intramuscularly continued twice a week for eight treatments. The Wassermann reaction became negative or markedly reduced in every instance after one course. Four remained negative according to serological findings; several improved in general condition. The lymph nodes decreased in size.

ULTRAVIOLET RADIATION

Ravant, Basch, and Lambling (*Ann. de Dermatol. Syph.*, August, September, 1925) advise the use of ultraviolet light as an adjunct in the treatment of syphilis. They feel that, while it has no direct effect upon symptoms or Wassermann reaction, there is a distinctly favorable influence upon the general health from the combined treatment. Actinotherapy alone, of course, the authors add, cannot in any way replace specific treatment.

CARDIO-VASCULAR REVIEW FOR 1926

BY SEELEY G. MUDD, M.D.,^{*} AND HOWARD B. SPRAGUE, M.D.

(Continued from page 931)

General and Experimental

The American Heart Association (*Am. Heart J.*, 1926, 2:202) suggest a nomenclature for cardiac diagnosis which is arranged under the following headings: (a) Etiological, (b) Anatomical, (c) Physiological, (d) Functional Capacity, (e) Patients with abnormal signs or symptoms, and (f) Potential Disease.

Aubertin and Rimé (*Presse Méd.*, 1926, 34:97) describe the clinical syndrome which suggests partial obliteration of the left auricle in two cases. The important findings were cyanosis of the toes, fingers and nose, feeble pulse, very faint oscillogram record, absence of the first heart sound, dyspnea and cardiac arrhythmia. The dilatation of the left auricle induced formation of blood clots therein which finally filled most of the auricle, and obstructed the mitral orifice. The clinical course was relatively slow, death occurring in one instance on the fifth day and in the other case on the ninth day.

Baird (*Texas State J. Med.*, 1926, 21:714) in an analysis of 100 patients, who came to the clinic complaining of pain around the heart, found that they proved to have the following disorders:—angina pectoris classical, 15; heart failure, or myocardial weakness, 42; cardiac neurosis, 17; hypertension, 17; chronic endocarditis (valvular disease) 7; luetic aortitis, 2. Baird employs the classification of cardiac pain which was suggested by White and Wood (*J. A. M. A.*, Aug. 18, 1923).

Benson (*Genl. Rev. Arch. Pathol. and Laboratory Med.*, 1926, 2:876) reports on the present

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status of coronary arterial disease and discusses in detail coronary thrombosis, myocardial infarction, the coronary circulation, arteriosclerosis, rupture of the heart, pericarditis in coronary disease and vascular lues.

Brooks (*J. A. M. A.*, 1926, 87:722) reports a case of complete ligation of the aorta for aneurysm in a male negro 59 years old. The aorta was tied with the fascia lata distal to the origin of the inferior mesenteric artery. A complete cure was effected, but the patient died three months later of intestinal obstruction. Brooks suggests that when there is no pulsation in the femoral arteries before operation, ligation can be considered. Astley Cooper, and Matas, and about 20 others have attempted this operation; however, only Matas and Brooks have been successful.

Brown (*Ann. Clin. Med.*, 1926, 5:353) examined the aorta in 29 cases of pneumonia, endocarditis, typhoid fever, measles and other acute infections. The characteristic lesion in the aortic wall in acute infections is a non-suppurative inflammatory reaction about the vasa vasorum of the outer half of the media, with necrosis of the neighboring muscle cells and elastic fibers. Brown affirms that the common mode of localization of acute infections is by way of the adventitia through the vasa vasorum and thence to the media producing a mesarteritis. He suggests that acute infectious diseases play an important part in arteriosclerosis.

Brown and Giffin (*Am. J. M. Sc.*, 1926, 171:157) in concluding their study of 14 cases of polycythemia vera, mention the following points: the total blood volume was increased in

all cases, the average value being 166 cc. per kilogram body weight. The viscosity of the blood and the enlargement of the spleen was increased in every instance. In 13 cases there was engorgement of the venous limb of the capillaries of the nail fold. No increase of the blood pressure was observed and there was no definite relationship to cardiac enlargement or cardiac disease.

Cabot's volume entitled "Facts on the Heart" (Philadelphia, W. B. Saunders Company, 1926) is based on the clinical and post-mortem study of 1,906 patients who came to autopsy at the Massachusetts General Hospital between 1896 and 1919. Data concerning 4,143 cardio-vascular lesions are presented. In the preface Cabot states: "Very few people should even try to read the whole of this book. I should advise most readers to read the opening and the closing chapter, and the summaries at the end of each section, and then to look over as many of the illustrative cases as seem interesting." In the first chapter the author points out that 38 per cent. of the individuals autopsied at the Massachusetts General Hospital in the past quarter century suffered from some important cardio-vascular lesion. In the succeeding chapters the following subjects are discussed: rheumatic heart disease, fatal chorea, syphilitic heart disease, hypertensive heart disease, myocarditis, angina pectoris, acute and subacute endocarditis, chronic non-deforming valvular sclerosis or endocarditis, acute pericarditis, chronic pericarditis, thyrocardiac disease, and congenital heart disease.

Cokkins offers a treatise on "Mesenteric Vascular Occlusion" (New York, Wm. Wood & Company, 1926). This work is supplemented by an appendix of 79 original cases.

Fahr (*Minnesota Med.* 1926, 9:5) states, in a rather general discussion of the subject, that 75% of the chronic heart cases which he has seen at the University of Minnesota, and Minneapolis General Hospital have chronic heart muscle disease, associated with high blood pressure. A study of the autopsy material of the Pathological Department of the University of Minnesota shows approximately 15% of all the cases of chronic heart disease were associated with coronary sclerosis alone. Fahr affirms that these two factors account for 90% of all the cases of chronic heart muscle disease.

Hamburger, Priest and Bettman (*Am. J. M. Sc.* 1926, 71:168) produced experimental coronary embolism in six dogs by the injection of a suspension of lyceodinium spores into the coronary circulation, with the following results: "Death at once, or within twenty-four hours, depending on the amount of the injection, and the size of the resulting infarct, the animals dying immediately showing ventricular fibrillation; those dying within thirty minutes complete A-V disassociation with obliteration of the R-T inter-

val; those within twenty-four hours, tachycardia from auricular flutter, with cloudy swellings and fragmentation of the myocardium, and vessels distended with spores. Changes in the electrocardiogram, compatible with life, such as inversion of initial complexes, right preponderance, nodal rhythm, ventricular extra systoles, ventricular tachycardia. Primary, secondary, and tertiary inversion of the T wave of dogs surviving the injection for two or three months, the heart at autopsy showing quite regularly infarction (fibrosis) of the apex of the left ventricle with vessels filled with spores with typical chronic interstitial myocarditis scarcely to be distinguished from that occurring in man, the result of atherosclerotic obliteration of the smaller coronary vessels."

Hoskin (*Lancet*. 1926, 1:1141) studied 16 cases of post-diphtheritic infection, clinically and electrocardiographically. All of these cases had definite signs of heart involvement while they were in the hospital. The average age was just under 10 years. Hoskin considers that the effect of diphtheritic toxin on the heart, in cases where the heart has become involved during the course of acute infection is more lasting than is generally recognized. Tachycardia, the presence of cardiac symptoms in one half the cases, diminished cardiac reserve, the recognition of heart abnormalities in almost one half the group, changes in the electrocardiogram especially the presence of slurring of the Q-R-S complexes, and alteration in the character of the third lead are points worthy of consideration.

Keefer and Resnick (*J. Clin. Investigation*. 1926, 2:375, 389) report ten cases (nine with necropsy findings) of jaundice following pulmonary infarction, in patients with myocardial insufficiency. Jaundice occurred within one to four days, usually on the second or third day after infarction. Bilirubinemia was responsible for the jaundice in all instances. The clinical course in all these cases was similar; since death occurred within a short time, due to progressive myocardial failure.

Lampert and Muller (*Frankfurt. Ztschr. f. Path.* 1926, 33:47) studied the relations between apoplexy and hypertension by forcing fluid into the cerebral vessels through the common carotid artery under various pressures. They found that in the cadaver the pressure required to burst a healthy cerebral blood vessel was represented in the carotid by a minimal pressure three or four times as great as the highest blood pressure observed in the carotid in the living subject. Rupture of a vessel occurred only where hypertension or vascular lues had been clinically determined. However, other factors were evidently necessary, for not in all cadavers thus affected did a like pressure produce rupture. The regions of the basal ganglia and the medulla oblongata were the most frequent sites of rupture.

Levine and Mattin (*Heart*. 1926, 12: 271) reported a case of Adams-Stokes syndrome in a school-teacher 52 years old, in whom the attacks of syncope lasted from several seconds to approximately five minutes. During one of these long attacks no beat could be heard at the apex of the heart, and no pulse was felt at the wrist; however, a continuous electrocardiogram taken during this period showed ventricular fibrillation, or a state of tachycardia closely resembling fibrillation, with a rate, at first, of about 240. Following this period of ventricular fibrillation, which lasted 205 sec., there was a complete standstill of the ventricles for over 79 sec. Intracardiac adrenalin, 0.5 cc. was injected. One minute later the heart began to beat at a rate of 135. After an interval of 4 minutes the heart rate fell to 41. Subsequently the patient regained consciousness.

Means, White and Krantz (*Boston M. & S. J.* 1926, 195: 455) have reported two cases of myxedema in which there was also cardiac disturbance. In the first case there was definite cardiac dilatation, with reduction in heart size and sudden death following thyroid administration. The second case is particularly interesting because of the production of angina pectoris by thyroid therapy. They suggest very gradual thyroïdization in myxedematous patients who have cardiac dilatation or other cardiac abnormalities.

Nuzum, Seegal, Garland and Osborne (*Arch. Int. Med.* 1926, 37: 733) report an experimental study on arteriosclerosis and increased blood pressure. They refer to five theories in regard to the etiology of arteriosclerosis and hypertension: (1) mechanical-physical theory; (2) chemical or infectious-poison theory; (3) metabolic theory; (4) predisposition of certain groups of persons to degeneration of the blood vessels theory; and (5) disturbance of the acid-base balance theory. Rabbits were employed in the investigation. The food used consisted largely of soy beans, liver and grains. They state that the continued eating of a diet high in protein foods increases the acidity of the urine from 100 to 1000 times that of the body fluid. The animals fed on excessively high protein diet for periods as long as two years showed a markedly increased blood pressure, and presented extensive arteriosclerosis of the aorta, and in many instances of the coronary arteries. Chemical studies of the blood and of the urine also demonstrated evident damage of the kidneys in these animals. The authors state that the histology of arteriosclerosis in rabbits is similar to that of human arteriosclerosis, and that spontaneous sclerosis in rabbits has an absolutely different histologic picture.

Sands (*J. Nerv. & Ment. Dis.* 1926, 64: 12) in a study of intracranial aneurysms reviews the literature and reports an interesting case. He says that intracranial aneurysms must be

thought of when there are definite signs of pressure on brain tissue. A bloody spinal fluid with cervical rigidity and Kernig sign, together with cranial nerve lesion, makes the diagnosis very probable. The intermittent character of the symptoms is of diagnostic value.

Shaw (*Quart. J. Med.* 1926, 19: 203) reports on an experimental study of nerve irritation and aortic lesions. He concludes as follows: "In ten out of a series of thirteen rabbits (exclusive of fallacies) subjected to operative irritation of the vagi there is endarteritis of the aorta, more particularly of the first part of the aortic arch. Four out of a series of five animals subjected to operative irritation of the cervical sympathetic present similar lesions. Two out of a series of five animals subjected to operative irritation of the depressor nerve also showed endarteritic lesions in the aorta, but it must be remembered that two others succumbed during operation. All three cases subjected to electrical stimulation presented these lesions. . . . It is not the purpose of the present paper to discuss the clinical application of these results, but it may be indicated here that they have a considerable bearing on the question of aortic disease associated with nervous phenomena; for example, such as occur in angina pectoris."

Stroud (*Am. Heart J.* 1926, 1: 354) states that: "The truest estimate of the extent of the encroachment upon the myocardial reserve is to be gained from the determination of the extent of the enlargement of the heart. A proper interpretation of the so-called reaction to effort, the association of subjective symptoms, a careful investigation for infection, past and present, careful auscultation of the heart regarding the time and character of the murmurs, and finally X-ray and electrocardiographic studies are other points of value in estimating the myocardial reserve."

White, Sprague and Jones (*J. Iowa State M. Soc.* 1926, 16: 479) report a study of the correlation of pathological and clinical findings of cardiovascular disease in 297 cases (out of 775) autopsied at the Massachusetts General Hospital in the five-year period from 1921 to 1926. The object of this study was to find out the physicians' ability to diagnose pathological conditions and to determine whether or not they are more able to diagnose accurately such conditions than they were 25 years ago. The authors conclude as follows: "On the whole with certain exceptions, notably chronic adherent pericarditis and uncomplicated luteic aortitis, our ability to diagnose cardiac disease depends on the extent of the disease. Thus very slight cardiac enlargement, slight aortic and coronary sclerosis, slight non-deforming valvular disease and slight terminal acute pericarditis are practically always missed and are probably not diagnosable. Cardiac hypertrophy sufficient to increase heart weight to 400 grams or more in an adult of average size should be diagnosed almost invariably. In diffi-

cult cases X-ray measurements may be necessary to make the diagnosis. Moribund state, obesity, and careless hasty examinations are the chief causes of error. Valvular disease involving the mitral and aortic valves either alone or in combination should be diagnosed in nearly every case provided the valves are deformed. Deformity is the rule. The greater the degree of stenosis (in the case of the mitral valve $7\frac{1}{2}$ cm. circumference or less, and in the case of the aortic valve 5 cm. circumference or less), the easier is the diagnosis. Valvular disease involving the tricuspid and pulmonic valves is almost never diagnosed. Congenital cardiac defects in babies are often missed. Chronic adhesive pericarditis is rarely diagnosed correctly. Acute pericarditis is often missed partly because it is very slight or terminal, and probably because at times there is no friction rub or other sign to call attention to it. Pericardial effusions are usually not diagnosed (unless they are very large—larger than those of the present series—and even then they may be missed). Lucetic aortitis is almost never diagnosed unless it is associated with aortic regurgitation or aneurysm. Acute occlusion of a large coronary artery should be diagnosed almost always. Gradual or slight occlusion may produce no symptoms and few or no signs. Arteriosclerotic heart disease is probably a common type. Hypertrophy of the heart not produced by valvular disease, chronic adhesive pericarditis, or proven hypertension needs more study and analysis of cause. Advance in recent years in the diagnosis of heart conditions has not only included functional disturbances, like auricular fibrillation and flutter and hypertension, and etiology like coronary thrombosis and subacute bacterial endocarditis, but appears also to be accompanied by greater accuracy in the diagnosis of mitral and aortic valve disease and of cardiac enlargement."

Willius (*Am. J. M. Sc.* 1926, 171:480) in a clinical and pathological report of the mode of death in 330 cases of heart disease studied at the Mayo Clinic determined the type and frequency as follows: (1) Chronic endocardial valvular disease, 28 per cent.; (2) arteriosclerotic cardiac disease, 25 per cent.; (3) hypertensive cardiac disease, 12 per cent.; (4) myocardial infarction, 11 per cent.; (5) bacterial endocarditis, 9 per cent.; (6) cardiovascular syphilis, 8 per cent.; (7) pericardial disease, 5 per cent.; (8) congenital cardiac disease, 1 per cent.; (9) cardiac hypertrophy associated with obesity, 0.6 per cent.; (10) cardiac failure from mechanical causes, 0.6 per cent.; (11) acute myocarditis, 0.3 per cent. Sudden death occurred in 125 cases. Embolic phenomena occurred in 58 individuals. Necropsy was performed in 85 per cent. of the cases reported.

Wood, Jones and Kimbrough (*Am. J. M. Sc.* 1926, 172:185) consider that climate and race are factors of interest in the causation of or-

ganic heart disease. They analyzed two series of cases. Three hundred patients of one group resided in or near the state of Virginia and the 323 patients of the other group lived in Massachusetts or neighboring states. One hundred and twelve of the first group were negroes. They conclude that: "Organic heart disease is almost twice as common in the negro as in the white. Hypertension (53.5 per cent.) and syphilis (21.4 per cent.) are the chief etiologic factors producing heart disease in the negro. Angina pectoris (paroxysmal heart pain) is less common in the negro (5.3 per cent.) than in the white (10.4 per cent.) despite the fact that syphilis (21.4 per cent.) and arteriosclerosis (39.3 per cent.) are such important factors in the former. Rheumatic heart disease is almost twice as common in Massachusetts (39.8 per cent.) as in Virginia (22 per cent.), and this is the largest etiologic group in the former locality. Hypertension as an etiologic factor is somewhat more prevalent in Virginia (45.98 per cent.) than in Massachusetts (36.79 per cent.) but comprises a large group in each series."

Wyckoff and Lingg, (*Am. Heart Jour.* 1926, 1:446) in an extensive report on the etiology of organic heart disease among 1001 adults, refer to the incidence, etiological type, race, nativity and nationality, for various age groups. "About one fourth of the cases presented rheumatic heart disease, about two fifths arteriosclerotic, about one tenth syphilitic, and about one tenth heart disease of unknown origin; other factors, such as scarlet fever, hyperthyroidism, nephritis, etc. together comprise less than one tenth of the total sample." A plea is made for a uniform system of records in the heart clinic to facilitate the collection of facts for statistical purposes.

Hypertensive Heart Disease and Essential Hypertension

Miller (*J. A. M. A.* 1926, 87:383) in a study of the visceral manifestations of cardiovascular disease suggests that the great variations in blood pressure in an individual case demand many carefully controlled observations before any conclusions can be drawn as to the value of any therapeutic measure. He points out that the etiology of hypertension is not known, and that until this is decided, it is difficult or impossible to discuss in a detailed manner preventive measures. He considers—"the treatment of hypertension as one of the many unsolved therapeutic problems. Under these circumstances, it is the duty of the physician to give advice and encouragement that may at least add to the patient's happiness, to avoid reminding him of this menace to his health, and to divert his mind from his disease by advising against the frequent taking of blood pressure."

Paulin, (*J. A. M. A.* 1926, 87:925) in a review of 76 cases of essential hypertension, observed for periods of from five to seventeen years, drew the following conclusions: "The number of cases was divided about equally between men and women. The mortality for the group of men was much higher than that for the women. A previous apoplectic seizure preceded death from cerebral hemorrhage in the majority of the cases. However, myocardial failure usually occurred earlier than cerebral hemorrhage. There was very slight kidney involvement in the late stages of this disease, there being only one death in the series because of renal failure. When essential hypertension occurs in women at the time of the menopause, it is relatively benign."

Vaquez and Donzelot (*Presse Méd. Paris*, 1926, 34:1329) observed paroxysms of arterial hypertension in a man, aged 37, whose blood pressure was usually approximately normal. The paroxysms started with pain and cramps in the lower limbs, gradually succeeded by abdominal colic, pain in the chest, similar to that in angina pectoris, and finally a violent headache. They lasted from 5 to 10 minutes. At first they occurred once in three weeks, later several times a day, following emotion or exertion, and sometimes without apparent cause. They were never preceded by clinical signs. These authors consider irritation of the splanchnic nerve and increase of epinephrine in the blood are the most probable causes for disturbed regulation of arterial tension.

Pericarditis

Conner, (*Am. Heart J.* 1926, 1:421) in an article on the diagnosis of pericardial effusions, emphasized the following points: "The results of the experimental injection of the normal pericardium after death with respect to the distribution of the liquid in the sac, and to the amount the distended sac will contain, cannot safely be applied to the clinical condition of pericarditis with effusion. In the latter state, the quantity of liquid is often vastly greater, and the shape of the distended sac entirely different. A pericardial friction sound not only may be, but usually is, present when the pericardium contains a large quantity of exudate. A visible and palpable cardiac impulse and apex beat also are quite compatible with the presence of a large effusion. In general, effusion signs suggestive of those of pleurisy with effusion are regularly found, not only over the left back, but over the right back as well. On the right side, these signs are sometimes present when the appearance of the X-ray film indicates that the right pouch of the pericardium contains only a relatively small quantity of liquid."

Schlesinger (*Med. Klin.* 1926, 22:2) reports a case showing almost complete incrusta-

tion of the pericardium with lime salts. No symptoms were noted for a considerable period.

Youmans (*Ann. Clin. Med.* 1926, 4:1032) has collected from the literature approximately 100 cases of calcification of the pericardium. A relatively small number of these cases were diagnosed clinically. There seems to be a definite relationship between calcification of the pericardium and Pick's disease. Two of Pick's original cases showed calcification of the pericardium. Diagnosis during life is almost entirely dependent upon the use of the X-ray. In this report 2 cases were added to the literature which were diagnosed clinically. In both cases tuberculosis was the etiological factor. Pericardotomy was performed in one case with apparently good results. A history of peritonitis, or polyserositis, the presence of rough scratchy cardiac murmurs or friction sounds, as well as signs of adherent pericardium, and signs of hard distended jugular veins may attract attention to the possibility of this disease being present.

Rheumatic Heart Disease

Andrews, Derick, and Swift (*J. Exper. Med.* 1926, 43:13) isolated 13 strains of hemolytic streptococci from patients with acute rheumatic fever and indicated that there was no evidence of serological relationship among the different types of organisms studied.

Barker and Cole, in their book "Rheumatism: Its Meaning and Its Menace" (New York, D. Appleton & Co., 1926) have written especially for the layman, with the object of giving information about the various types of the disease commonly called rheumatism, and the method of medical control.

East (*Lancet*, 1926, 1:1194) reports clinical and autopsy findings in a case of rheumatic heart disease with mitral stenosis and regurgitation, adherent pericardium and auricular fibrillation. Pathological findings showed that the left auricle was enormously dilated, the capacity being about one and a half pints. The wall was very thin and no muscle could be seen macroscopically. This huge left auricle completely filled up the arch of the aorta, and passed to the right behind the right auricle. East considers that the left auricle attains a greater degree of dilatation than the other chambers in the heart for three reasons. First, it has a very thin wall; secondly, there is no safety valve into the great veins like the right auricle, and finally, the left auricle is filled by both ventricles at the same time when there is mitral regurgitation.

Pappenheimer and Von Glahn (*Am. J. Path.* 1926, 2:15) report the case of a boy 9 years old who had typical rheumatic fever with a remission, including progressive involvement of the heart and pericardium. The chief point of interest in the necropsy findings was the

aorta. However, there was nothing grossly abnormal. Microscopically, several striking changes were noticed in the adventitia, and in the outer two thirds of the media. Two drawings from sections in the aorta illustrate acute rheumatic aortitis. The chief points of interest were: cellular infiltration about the penetrating vessels in the media; polymorphonuclear leukocytes and large cells with basophilic cytoplasm about these vessels; in addition some of the large cells showed multiple nuclei. No bacteria could be demonstrated and no embolic lesions were made out.

Rabinowitz, (*J. A. M. A.* 1926, 87:142) in a study of rheumatic pneumonia states, "From a clinical standpoint at least, the pneumopathy described above is to be interpreted as a manifestation of the action of the virus of rheumatic fever."

Riehdorf and Griffith (*Am. J. Dis. Child.* 1926, 31:250) report a case of an infant, who, on the sixth day after birth, developed pains in the right knee and right elbow associated with redness and swelling of these joints and slight fever. On the thirteenth day, definite fluctuation was noted in the right knee joint, and 5 cc. of thick, stringy mucoid material was removed by needle. At the same time a blood culture was taken from the mother, who on the fifth day before delivery, had pain on movement of both shoulder joints, sore-throat and slight fever. Cultures from the mother's blood and joint fluid of the baby, yielded streptococcus viridans in pure culture. The organisms of both cultures were similar, and were agglutinated by the mother's blood in a dilution of 1-50. The child was apparently normal at 8 months of age. This case suggests intrauterine infections of the infant by the organism circulating in the mother's blood.

Sacks (*Am. Heart J.* 1926, 1:750) reports a detailed critical review of the pathology of rheumatic fever, and emphasizes the following points: "The Aschoff bodies in the myocardium are periarthritic collections of mononuclear and multinucleated histiocytes, and constitute the specific lesions of rheumatic fever. Inflammatory foci, which are almost identical, are also found in the heart valves, the visceral pericardium, and the aorta, and their development in these structures is probably due to the fact that their blood supply like that of the myocardium, is derived from the coronary arteries. . . . The proliferative lesions in the periarticular tissues, the subcutaneous nodules and the lesions of the brain and meninges differ superficially from the Aschoff nodules, but when due allowance is made for the difference in histological structure of these tissues, the lesions are discovered to be essentially comparable to those in the heart. . . . Anti-rheumatic drugs cause a subsidence of the exudation in and about the joints (which are responsible for the

acute articular symptoms), but as Swift has shown, they are without effect in the periarticular proliferative lesions. It is also known that the subcutaneous exudative nodules, Aschoff bodies in the heart, and valvular disease continue to develop even if these drugs are exhibited in maximum doses. . . . The anatomical basis for chronicity is the Aschoff body, or its homologues, which resemble infectious granulomata, due to other causes, e.g., tuberculosis. The anhemolytic streptococcus may be cultivated from the blood of rheumatic fever in a certain percentage of cases, but although it has not been proved that this organism is not the cause of this disease, convincing evidence that it constitutes the infecting agent has not been furnished, and further work must be done before the vexing problem of etiology can be considered solved."

Sprague and White (*Am. Heart J.* 1926, 1:629) "considered a diagnosis of pure organic mitral regurgitation justified when there has been a constant, loud, apical systolic murmur with enlargement of the heart recognized by physical examination or roentgenogram, with or without a frank rheumatic history, in the absence of hypertension, arteriosclerosis, fever, anemia, or other such factors that might produce dilatation." Their conclusions are based on careful observations in twenty cases each of pure mitral stenosis and pure mitral regurgitation. They state: "It is often possible to differentiate, clinically if not pathologically, cases of pure mitral regurgitation, and pure mitral stenosis by means of the murmurs heard on auscultation. Loud apical systolic murmurs unaccompanied by diastolic murmurs cannot be entirely disregarded, as has often been done, but should be judged in relation to history, other physical findings, and X-ray measurements of the heart. . . . Mitral regurgitation causes a general enlargement of the heart, as contrasted with the right ventricular, and left auricular enlargement due to mitral stenosis. Pure organic mitral regurgitation is a clinical entity, but it is not demonstrable at necropsy, as it is rarely if ever fatal. This does not, however, decrease its significance, since regurgitation is usually but one stage in the process of stenosis, which is more often a terminal condition. Under the most favorable conditions, organic mitral regurgitation exists as a potential danger."

Von Glahn (*Am. J. Path.* 1926, 2:1) refers to several cases of rheumatic endocarditis of the left auricle, which have appeared in the literature. He mentions 31 cases of rheumatic valvular endocarditis demonstrated at autopsy at the Presbyterian Hospital, New York City, during the past five years. Of these nine cases showed involvement of the auricular endocardium. The report is well illustrated, and includes both gross and microscopic draw-

ings. A resumé of each case is included. The pathological report of the heart, in case 1, is incorporated herewith in detail. "The heart was greatly enlarged. Pericardium everywhere adherent to heart. Verrucose vegetations on tricuspid mitral and aortic valves. Mitral valve scarred. Endocardium of left auricle thickened to form a large plaque whose surface is somewhat wrinkled and irregular. The elevated area is yellow in color. The thickening involves almost the entire auricle, extending into the auricular appendage and downward upon the surface of the mitral valve. The process stops at a little distance from the orifices of the pulmonary veins. Myocardium scarred."

The histologic examination showed: "In the endocardium of the left auricle are bands of hyaline material bordered by Aschoff cells. There are also Aschoff cells about collagen fragments. Large areas densely infiltrated with small mononuclear cells, polymorphonuclear leukocytes and a few eosinophiles; capillaries are also penetrating from myocardium into these cell accumulations. No vegetations of the surface. Elastic fibers are pushed apart by the infiltrating cells, and are distorted and fragmented. Delicate elastic fibrils in the areas of cell infiltration; Aschoff bodies in the myocardium."

Von Glahn and Pappenheimer (*Am. J. Path.* 1926, 2: 235) reported on the specific lesions of peripheral blood vessels in rheumatism and examined a series of 47 consecutive cases of rheumatic heart disease. Specific lesions of the small peripheral arterioles and capillaries, either systematic or pulmonary, were found in ten of the cases. The lesions are characterized by the exudation of fibrin into and about the vessel wall, by a distinctive cellular reaction in the adjacent tissue, by the absence of thrombosis, and are followed by organization with or without the formation of new collateral channels within the thickened intima and occasionally within the muscular layer.

Wilson and Kopel (*Am. J. Dis. Child.* 1926, 32: 46) studied the significance of the leukocyte count as an index of rheumatic infection in 88 children, ranging from 4 to 15 years. A total of 348 leukocyte counts were made in this group in children exhibiting the following rheumatic manifestations: acute, or subacute rheumatic fever; active chorea; recurrent growing or joint pain; and rheumatic heart disease. It is suggested that repeated leukocyte counts in children with rheumatic infection, appeared to be of some clinical value in diagnosis, prognosis, and treatment. "The average leukocyte count for children with a history of previous rheumatic infection (potential heart disease) was 7,000 cells. The average leukocyte count for children with organic heart disease was 7,700 cells. The average leukocyte count for children with active rheumatic infection, cardi-

tis, arthritis, chorea, and recurrent growing and joint pain was about 9,000 cells. A leukocyte count within the normal range may be considered as indicative of the quiescence of the rheumatic infection."

Subacute Bacterial Endocarditis

Blumer (*Am. Heart J.* 1926, 1: 257) regards the detection of digital lesions in the form of Osler nodes, tender digits, splinter hemorrhages or clubbing of the fingers, as being of great value in the diagnosis of doubtful cases of subacute bacterial endocarditis. No conclusions can be drawn at present as to the frequency of these findings.

Clawson and Bell (*Arch. Int. Med.* 1926, 37: 66) point out that the transition from acute rheumatic to subacute bacterial endocarditis may be very gradual, so that it is only with difficulty that one is able to tell when this change occurs. In a careful consideration of the subject, they point out the following factors: "The leukocyte count is of little value in differentiating rheumatic and subacute bacterial endocarditis. A severe secondary anemia strongly suggests the subacute bacterial type. Pericarditis occurs with about the same frequency in subacute bacterial endocarditis and in rheumatic endocarditis. However the myocardium is more often affected in the acute rheumatic cases. The frequent presence of embolic phenomena in the subacute type depends on the degree of involvement of the infected valves. The finding of bacteria in the blood stream in endocarditis does not necessarily indicate the presence of the condition clinically recognized as subacute bacterial endocarditis. The streptococci, generally the viridans strain, seem to be responsible for both rheumatic and subacute bacterial endocarditis. By the injection of streptococci, experimental myocarditis and endocarditis similar to human rheumatic lesions can be produced in rabbits."

Howell, Portis and Beverly, (*J. Infect. Dis.* 1926, 39: 1) in a case of acute malignant endocarditis, isolated both streptococcus hemolyticus and streptococcus viridans from the blood on three different occasions. During a period of five months, the patient received twelve transfusions of immune whole blood. Before immunotransfusion was begun, the blood serum contained no agglutinin for the streptococci isolated. The agglutinin titer of the recipient's blood serum increased after each transfusion, and reached higher values than the transfused blood. Complement-fixing antibodies also increased but fluctuated irregularly. The increase in specific antibodies of the recipient's blood, both as compared with its own original content and with that of the immune donors, was interpreted by the authors as evidence of the development of active, as well as passive immunity as the result of immunotransfusion.

Wilson (*Am. Heart J.* 1926, 1:703) presents three cases of subacute bacterial endocarditis, each complicated by the presence of mycotic aneurysms of the intraventricular septum. The terminal event in two of these cases was heart block. The bundle of His was involved in the destructive process in both instances.

Syphilitic Aortitis and Syphilitic Heart Disease

Conto (*Bull. Acad. de Méd.* 1926, 95:406) reports three cases of perforation of the aorta, communicating with the pulmonary artery, which were clinically diagnosed. The symptoms suggesting the diagnosis were the instantaneous appearance of dyspnea, cyanosis and pain in the chest, accompanied by a basal systolic murmur and aortic thrill. This combination presents the pathognomonic picture of perforation of the aorta.

Kolodny (*J. A. M. A.* 1926, 86:397) reported a case of multiple aneurysms in a white American man, age 62, who showed thrombosis of an aneurysm of the popliteal artery with complete occlusion of the lumen of the vessel, followed by gangrene of the extremity, associated with a large aneurysm of the right axillary artery, an aneurysm the size of a hickory nut in the supra-aortic portion of the left carotid artery, and a walnut-sized aneurysm of the left external iliac artery. An X-Ray showed in addition a sacculated aneurysm of the thoracic descending aorta. The blood Wassermann was strongly positive. Amputation through the right thigh was done. On the second post-operative day he suffered a stroke with complete blindness of both eyes and paralysis of the right upper extremity, but within a week no symptoms of the stroke were present.

Tumors

Beck and Thacher (*Arch. Int. Med.* 1926, 36:830) report a case of spindle-cell sarcoma of the heart. Involvement of the heart with sarcoma was suggested by the subnormal blood pressure, rapid pulse rate, systolic murmur and an abnormal contour of the heart by roentgenogram. The tumor was situated in the wall of the left auricle. Numerous metastases were present in the muscles and subcutaneous tissues of the buttocks, scrotum, legs, arm and chest.

Kapsinow (*Ann. Surg.* 1926, 83:161) reports a case of carcinoma of the heart and pericardium secondary to cancer of the breast by direct continuity along lymphatic channels.

BLOOD PRESSURE

Alvarez, McCalla and Zimmerman (*Arch. Int. Med.* 1926, 38:158) indicate in a statistical analysis that in men constipation has absolutely no effect on the blood pressure. In women, there is a rather definite connection between constipation

and a slightly lower mean blood pressure. Standards are given for the correction of average blood pressure determinations according to differences in age and weight. In men the blood pressure does not rise appreciably until after the age of 50. Men with normal weight average 10 mm. higher than do the lean, and the stout average 13 mm. higher than the normal.

Alvarez and Zimmerman (*Arch. Int. Med.* 1926, 37:597) present evidence in support of the theory that the "essential" type of hypertension is a bodily peculiarity, inherited equally by girls and boys, but ordinarily repressed in women before the menopause by the ovarian or other endocrine factors. When the pelvic organs are subnormal, the disease may appear in women as early as it does in men.

Barksdale (*Am. J. M. Sc.* 1926, 171:111) uses the name "cucurbocitrin" for what he terms the active depressor substance in the seed of the watermelon. He affirms that: "With clinical trials in a limited number of cases of moderately increased blood pressure in the human, we obtained a lowering in both systolic and diastolic pressures, with a corresponding lowering in the pulse pressure in most of the cases studied."

Boas and Shapiro (*Am. Heart J.* 1926, 1:643) reported, a year ago, upon a group of five patients with true hypertension, in which there was an elevated basal metabolic rate, nervousness, tachycardia, loss of weight and pigmentation of the skin. In the present communication, they report an additional 10 cases exhibiting essential hypertension and basal metabolic rate above +15 per cent. out of a group of 27 patients with essential hypertension. These authors conclude that: "Patients with diastolic hypertension and augmented heat production present a special syndrome, which should be distinguished from Graves' Disease, as well as from uncomplicated hypertension."

Bordley and Baker (*Bull. Johns Hopkins Hosp.* 1926, 39:229) have made a careful, clinical, and pathological study of 14 patients, all of whom showed arteriosclerosis of the medulla oblongata and moderate to extreme hypertension. Ten other cases showed no marked elevation of blood pressure, or arteriosclerosis of the medulla oblongata. The authors present several micro photographs taken from this series which indicate great thickening of the arterioles in the medulla. The intima was the site of the greatest change and the lumen was often greatly reduced in size. They conclude their discussion as follows: "We feel that it is altogether likely that when these vascular changes take place in the brain-stem, there is an explanation for the occurrence of hypertension."

Dally presents a second revised edition of his book on "High Blood Pressure, its Variation and Control" (New York, Wm. Wood & Company, 1926). This work is a manual for practitioners

and deals with physiological factors and variations, arteriosclerosis, significance of pathologically high arterial pressures, as well as other clinical and historical aspects of the subject.

James, Laughton and Macallum (*Am. J. Physiol.* 1926, 75:392) report on the control of blood pressure with hepatic extract and refer to the findings of many investigators, who have shown depressor elements in extracts from spleen, pituitary, mucous membrane of the intestine, testis, pancreas, ovary, thymus, thyroid, and suprarenal. These investigators state that in rabbits liver extract markedly reduced the hypertension induced by pressor substances (epinephrin, pituitrin, and parahydroxyphenyl ethylamine). They claim that histamine or cholin are not the active depressor substances in liver extract.

Korns (*Am. J. Physiol.* 1926, 76:247) made observations on the compression sounds of Korotkov upon 29 normal subjects, and upon 6 patients who presented signs of aortic regurgitation. Contributory evidence is brought forward in support of the assumption that the mechanism which operates to produce the Korotkov sounds in man is identical with the water hammer action which Erlanger has found to be the cause of arterial sounds in animals.

McDonald and Burnett (*Boston M. & S. J.* 1926, 194:381) state that a liver extract preparation has been obtained which is able to reduce to a certain extent essential arterial hypertension. The extract employed contains a relatively large quantity of cholin, histamine in small quantity, and no protein or peptone. It is suggested that the proper combination of histamine and cholin may be responsible for the reduction in blood pressure noted in man and in laboratory experiments on animals. The liver extract used is more efficacious when injected intramuscularly, and has a more marked effect in hypertension than in normal cases.

Major (*J. A. M. A.* 1926, 87:311) has treated approximately 100 patients suffering from high blood pressure with liver extract. No detailed figures are given, but reference is made to the fact that many of the patients so treated have improved most strikingly symptomatically. In some instances the improvement in symptoms was associated with falling blood pressure. In other patients, no reduction in pressure was noted. He states that definite conclusions cannot be drawn until a large number of patients have been treated over a long period of time.

Major, Stoland, and Buikstra (*Bull. Johns Hopkins Hosp.* 1926, 39:222) used rabbits and dogs in an investigation of the effects of hepatic extract upon experimental hypertension produced by guanidin compounds. In concluding this article, the authors state: "The evidence that we have obtained points to an action of guanidin on the arterioles and capillaries as the mechanism by which the elevation in blood pres-

sure is produced, and also indicates that the action of liver extract consists in abolishing this vaso-constriction. The exact measure of this action remains to be studied further. The liver extract which was used for these experiments has no effect upon the blood pressure of a normal animal when employed in doses used in these experiments. The method of its action suggests, at least, in part, a neutralization of the effect of the guanidin either on the nerve endings in the smooth muscle of the blood vessels, or on the smooth muscle itself."

Roddiss and Cooper, (*J. A. M. A.* 1926, 87:2053) in a report of the effect of climate on blood pressure, affirm that the blood pressure is modified by climate. Their examination of northern white men shows that in the tropics the systolic blood pressure of these men averaged from 10 to 15 mm. of mercury below the normal for the temperate zone. The change takes place slowly and results in a lower vasomotor tone and a general slowing of physiologic activity. Consequently, the manner of living must be modified to correspond to the lowered physiologic activity, in order to prevent injury to health.

Schaefer (*Deutsche Ztschr. f. Chir.* 1926, 195:217) recorded the blood pressure in 220 patients during various operations. In the greater number the blood pressure was uninfluenced. It was increased in a few cases, in which the patient's general condition was good. Lowered blood pressure was observed frequently when the general condition was poor. Operative injury or irritation of organs in the splanchnic region may cause a reflex loss of vascular tonus of this region, producing collapse. Reflexes affecting blood pressure may be excited from any part of the body and Schaefer believes that the operation itself is thus responsible for many cases of altered blood pressure heretofore ascribed to a narcotic. Ether or chloroform will lower blood pressure in weak persons. In strong persons ether has usually no effect on the blood pressure, while chloroform lowers it moderately. Local anesthesia raises blood pressure in robust individuals through its psychic effect.

Smith, Miller and Graber (*Arch. Int. Med.* 1926, 38:109) in a study of the relative importance of systolic and diastolic blood pressure in maintaining coronary circulation, suggest that the decreased coronary flow associated with the diminished diastolic pressure in aortic regurgitation and arteriovenous aneurysm is probably a significant factor in the development of the cardiac hypertrophy and cardiac failure.

(To be continued)

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 13471

PAIN AND STIFFNESS IN THE NECK

MEDICAL DEPARTMENT

An American automobile mechanic thirty-eight years old was sent from the Out-Patient Department September 14 for study of pain and stiffness in the neck.

Six weeks before admission he was in bed three days with hemorrhoids. These disappeared in a week. The stools were bloody for a few days. On the third day he noticed stiffness of the neck. Since the onset he had been unable to work. For the past five weeks following incision of a "wen" he had had sharp, shooting, lightning-like bilateral pains in the head, more marked on the left side and radiating towards the vertex, less severe in the occiput. These came at intervals of half a minute to a minute and a half and might last as long as two hours unless relieved somewhat by aspirin. They were so severe that he had not been able to sleep at night "at all" for the past two weeks. After two weeks the stiffness of the neck almost but not quite disappeared for three weeks. He had occasional ringing in the ears. For two weeks he had been taking 40 to 50 grains or more of aspirin daily. Two weeks before admission his teeth were X-rayed and eight were extracted. The dentist found "enough pus in the mouth to cause all his trouble." For two weeks he had had loss of appetite. Two weeks before admission the base of one index finger became sore, slightly swollen and tender. Apparently the joint was not affected. About the same time a tender swelling appeared on the front and one on the back of the left thigh. These were still so painful that he could not bear his weight on the leg. For three days he had had also a constant pain in the left shoulder which made him feel like crying out. With this a gland in the left axilla became enlarged to the size of an acorn and tender on pressure. In the past three days the pain in the head seemed to have given place to pain in the neck, which was dull while the neck was at rest but very sharp on motion, especially at the right front and left back of the neck. For three days there had been an enlarged gland in the right side of the neck. September 11 and 12 he vomited four times without relation to meals. The vomitus was food eaten at the previous meal.

September 12 X-ray examination of the cervical and upper dorsal spine in the Out-Patient Department was negative. September 13 he felt nauseated. The right ankle joint had been lame but was improving. After walking fifteen minutes to five hours on the left leg it twitched and felt as if it would double up under him. The joint seemed to him the weak spot. At times it seemed as though the upper part of the femur were protruding. For the past six weeks he had taken cathartics almost every night, although formerly once a week was enough. He felt weak, but had not lost weight. The day of admission while he was in the bath before being put to bed in the ward he had a very sudden intense pain in the neck which "left him almost lifeless for a while." After this his neck was the worst of his troubles. It seemed as if a painful kink had been added to previous soreness and stiffness.

His mother died at forty-eight of "nervous prostration."

He had malaria—chills and fever—every other year until he was twelve. At fourteen he had an abscess in the right ear. Fourteen years before admission he had gonorrhea with successful treatment. Nine years before admission he had an attack of diarrhea for two weeks. From five years until three years before admission he had stomach trouble which his physician thought was mostly due to nervousness. Three years before admission he had carbon monoxide poisoning at his work. He was dizzy more or less all the time. He urinated every two hours and a half by day and once at night until two weeks before admission, now every two hours at night. (He was now drinking much water.) He weighed 174 pounds until two years ago. He now weighed 168. He used very little alcohol, chewed tobacco only at intervals and had not smoked in two weeks.

Clinical examination showed a well nourished man propped erect in bed complaining of great stiffness and pain in the neck on motion. Throat not well seen because he was unable to open his mouth wide. A collodion cocoon over the right parietal region of the scalp. A pea sized, hard subcutaneous nodule, not tender, in the occipital region. Several pea to bean sized glands in the right anterior triangle of the neck. Back of the neck diffusely red. A bony hard protrusion attached to the left of the cervical spine at about the fifth vertebra. The spinous processes of the seventh cervical and first thoracic vertebrae seemed larger than normal. On the upper border of the pectoral muscle on the left was a hard subcutaneous nodule, not very movable, slightly tender, one inch in diameter. Spinal dullness to the third thoracic vertebra. Apex impulse of the heart not localized. Left border of dullness 8.5 centimeters to the left of midsternum, 2 centimeters outside the midclavicular line, supracardiac dullness 7.5 centimeters, right border 3 centimeters. Sounds and action normal. Blood

pressure 180/80. Abdomen normal. The outer side of the proximal phalanx of the right index finger appeared swollen, slightly red and tender. Joint motion normal and not painful. Tenderness over the greater trochanter on the left. Rectal examination showed internal and external hemorrhoids. Prostate negative. Pupils and reflexes normal.

Amount of urine 45 to 115 ounces, specific gravity 1.015 to 1.010, cloudy at 4 of 5 examinations, alkaline at 4, the slightest possible trace of albumin at one. Renal function 10, 15, 25 per cent. Blood: 16,000 to 8,800 leucocytes, polynuclears 85 to 78 per cent., hemoglobin 80 to 85 per cent., reds 6,020,000 to 6,200,000. Two smears normal. Non-protein nitrogen 56 to 59 milligrams. Wassermann negative. Stools: guaiac negative at all of 5 examinations. Vomitus: guaiac negative.

X-ray plates of the cervical and upper dorsal spine and the bones of the thorax again failed to show any definite variation from the normal. The lower half of the left chest was less radiant than normal. The diaphragm on this side was a little high. Just above it, apparently obscured by the shadow of the heart, was a round dense area about 4 centimeters in diameter with fairly sharply defined margins. There was a similar smaller area near the root of the lung. A plate of the pelvis showed no evidence of pathology.

Temperature 98.4° to 101° with a terminal rise to 105°. Pulse 68 to 124 with a terminal rise to 143. Respirations 19 to 37.

An orthopedic consultant found almost entire rigidity of the cervical spine due to muscle spasm. A urological consultant found nothing suggesting the kidney as an origin of the disease. Two radiologists thought X-ray treatment would be of little value.

The patient was more comfortable on head traction and a Bradford frame, but any motion of the head caused intense pain. He was kept under morphine. By September 16 the nodule in the left axilla appeared to be larger. September 18 there had been no movement of the bowels since admission. That day he vomited two or three times after eating. There was much distention, not relieved by three enemas. Turpentine stupes and rectal tube finally caused expulsion of gas with some relief. That day a biopsy was done on the nodule in the left axilla. The following day by advice of a surgical consultant one cubic centimeter of pituitrin and a stupe were given and repeated. There was only slight gas result the first time, nothing the second time. Enemas returned clear. Peristalsis was present by auscultation. The hemorrhoids were much distended and very painful. September 20 the abdomen was a little softer. He had no abdominal pain. 1/25 of a grain of physostigmin was given subcutaneously with only slight gas results. He was given subpectorals. September 21 enemas gave slight fecal results. The patient was kept under morphine

much of the time. September 23 there was some passage of feces voluntarily and September 25 satisfactory defecation. The abdomen was soft. The patient was rational and comfortable when quiet. The original "wen" which was incised before admission was now a large, firm, red, increasing growth the size of a silver dollar and with a necrotic center.

September 29 and October 1 deep X-ray was tried. September 30 the temperature was 101°. The patient was flushed and incontinent of feces. October 2 the temperature was 104° and he looked very ill. There were two small subcutaneous nodules in the abdomen. The temperature, pulse and respiration steadily rose. There was bronchial breathing at the right base. October 3 he died.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

1. I think we might say at the outset that if this patient had recovered there is a very large range of possibilities we should have to consider,—possibilities which are ruled out by the fact that we know he died on the 3d of October. That is, the number of fatal causes of pain such as is here described is small. For instance, migraine might give such pain, but nobody ever died of migraine.

2. The history-taker naturally doubts whether a person could go two weeks without any sleep.

3. We are not told whether or not the pain disappeared with the stiffness. But as he was taking aspirin daily we may assume that although the stiffness had left his neck the pain had not.

4. Here is the million-and-first time that we have heard this statement from the dentist, and we know, I suppose, that it is not likely to have caused all his trouble, because he died.

5. Later we have symptoms that sound like metastatic sepsis—in his leg, in his shoulder, in his hand. Perhaps his teeth did have something to do with it.

6. In the X-ray examination they were thinking of osseous tuberculosis probably, or possibly of metastatic malignant disease.

7. "After walking five hours" is an interesting remark. We should not think a man as sick as this able to walk five hours.

8. We should certainly have expected that he would have lost weight.

9. I take it that he almost fainted with this pain in the neck.

10. Of course his mother did not die of "nervous prostration." What she did die of we probably never shall know. Arteriosclerosis and chronic nephritis are commonly called "nervous prostration" at this age.

11. The paragraph about his past history I cannot connect with the symptoms that bring

him here. So far as I know these ancient facts, though rightly written down by the history-taker, have no relation with the case.

12. Before beginning the physical examination my best guess would be that he has sepsis. Where it comes from I have no idea.

NOTES ON THE PHYSICAL EXAMINATION

1. The deeper parts of the neck are a very well known, classical place for sepsis. "Vincent's angina" is the name for this. It often does not show on the surface for a good while.

2. "Back of the neck diffusely red" is much more definite evidence of something like a Ludwig's angina.

3. I think it is very hard to tell whether these vertebrae are larger than normal. They vary a great deal. I should not be able to say what is here said.

4. The spinal dullness is certainly two or three vertebrae too low.

5. Most of the time he had no albumin in his urine. The renal function on the whole is good enough.

6. The leucocytes are not notably high. With a local inflammatory process in the neck it is perfectly possible that there is some congestion of the ears with an abnormal accumulation of reds on the surface, whence the blood was taken.

7. The non-protein nitrogen is a little high.—one of those borderline records which are hard to interpret.

8. The chart shows a very slight fever, most of the time running along between ninety-nine and one hundred, until we get fairly close to death. Six days before death it is steadily going up and the pulse following it. So he had only moderate fever until the end, then steadily ascending.

Now we have all the events so far as I know, and I can see little except sepsis, although we are looking for malignant disease, especially after seeing that oval area in the X-ray of the lung.

A STUDENT: One of the visiting men thought it looked very much like a "tennis-ball" metastasis.

DR. CABOT: Of course those are the two things we are thinking about,—malignant disease and sepsis.

Presumably after the biopsy they knew a great deal more than we do. I take it they would not have taken out the nodule if they had thought it was inflammatory. It might have been inflammatory, but was more likely to be malignant.

In the treatment they were mostly pegging away at the abdomen.

DIFFERENTIAL DIAGNOSIS

As the record goes on my original guess about sepsis looks less and less probable, and malignant disease seems more and more probable. In the first place, if it was sepsis it is hardly conceivable

they should not have made an opening in him somewhere. The sepsis would before his death have come near enough to the surface so that they would have tried to let out pus. He would have presented the evidence of subcutaneous sepsis, and such an attempt would have been made. Moreover he showed very little fever, he had a low leucocyte count, both against the grade of sepsis which he ought to have had to have died of it.

So that I am swinging around now to the diagnosis of some kind of malignant disease. Where it started I do not know. The most evident points—in the neck, and that nodule in the lung and in the axilla—are probably metastatic we should say. There is nothing in the X-rays of the chest to show that it started in the lung, where it might easily be supposed to start, or in the bones. They have been over the bones very carefully. Metastases from the prostate, so far as I remember, are not like these. They get into the bones much more constantly, and would have been discovered there. He has had a little indigestion, but not enough to make us think of cancer in the stomach or the liver or the gall-bladder. Hypernephroma I suppose we can never exclude, but we certainly should expect some bone metastases, which they have done their best to exclude and apparently have excluded. Primary cancer in the lung or pleura certainly ought to give more physical signs. I suppose it might be a malignant lymphoma. It appeared in the lymph glands and in other places that might have lymph tissue. I do not know that it appeared anywhere that is not consistent with that. But in that case I should expect other and larger glands, and the spleen should be enlarged. It does not seem like a typical lymphoma. On the other hand, his abdominal symptoms might be explained if there were lymphoma there.

So I think he died of metastatic malignant disease the starting-point of which I do not know.

DR. YOUNG: You do not speak of the wen. That might be a rapidly growing sarcoma. The spread would be consistent.

DR. CABOT: Is sarcoma a proper term now?

DR. MALLORY: Yes, we still use it for most malignant tumors which are not of epithelial origin.

DR. W. S. BURRAGE: I think the discussion has summed up the situation pretty well. There were no physical signs in the lung, no obstruction to breathing, and even the signs of consolidation at the base were extremely mild up to the very end.

DR. YOUNG: From your treatment of the abdominal distension I assume you thought it was not due to an obstructing process from malignancy but more due to reflex.

DR. LAWRENCE B. ELLIS: Our first thought was that it was obstruction, but there was no audible and visible peristalsis and no abdominal pain, so we concluded that it was more probably

paralytic ileus, possibly due to nerve root pressure by metastases. A surgical consultant agreed with this opinion. Therefore treatment was given for this condition.

X-RAY INTERPRETATION

The appearance is consistent with metastatic malignant disease.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Metastatic carcinomatosis.

DR. RICHARD C. CABOT'S DIAGNOSIS

Metastatic malignant disease, primary focus not recognized.

ANATOMIC DIAGNOSES

Carcinoma of the bronchus.
Metastases throughout the body.

DR. MALLORY: This is one case in which the physicians consulted us ante mortem as well as post mortem. A nodule was excised from the border of the pectoral muscle. It was not a lymph node. The microscope showed a very rapidly growing malignant tumor which we felt certain was of epithelial origin, but we could not make any further guess as to where it came from. Two possibilities that were considered were hypernephroma and osteogenic sarcoma arising from a long bone in which one had not been able to find the original site. Both of these we could rule out definitely, but we could not make any guess as to where the primary focus was. Even at necropsy it was hard to find it at first.

This is one of the rare cases actually showing a chronic interstitial pancreatitis. When I was making the necropsy I thought from the hardness of the pancreas it was cancer, but the microscope showed us that the consistency was due to fibrosis and inflammatory exudate.

The primary tumor was found in the lung, in the lesion supposed to be metastatic. It was in the lower lobe. Here is the trachea and the right primary bronchus. The first subdivision is normal. The second subdivision showed at this point the lumen narrowed to about a fourth of its diameter, with infiltration and thickening of the wall, and continuous with it this large tumor mass in the lung parenchyma. The tumor had grown through from the lower lobe and invaded the upper, which is unusual. The bronchus beyond the tumor was slightly but definitely dilated,—the beginning of a bronchiectatic cavity. There were metastatic nodules all throughout the lungs and that was equally true throughout the body. It seemed as if there was hardly a cubic centimeter, with the exception of the spleen, not filled with metastases.

There was a large metastatic nodule in the myocardium in the wall of the left ventricle,—a very unusual place for it. The chart inter-

ested me in that the pulse seemed high in relation to the temperature. I do not know whether there is any literature to show that metastatic tumors in the heart can cause a thing of that sort or not. It is slightly suggestive. There were no tumors of the interventricular septum.

DR. CABOT: Was there anything to show why he had so much pain in his head and neck?

DR. MALLORY: No. We were not allowed to open the neck. I think he must have had a metastasis somewhere in the spine. His voluntary muscles were full of them.

DR. CABOT: Is it usual to get so many metastases a long distance off from a lung tumor?

DR. MALLORY: My impression is that bronchial tumors are rather slowly growing and with not a very marked tendency to metastasize, that in many cases death results from secondary infection beyond the cancer with abscess formation, rather than actual death from metastatic tumor. In this case the sections quite definitely showed invasion of numerous blood vessels. He must have had tumor cells circulating in his blood in considerable numbers.

DR. CABOT: Did you open the head?

DR. MALLORY: No.

DR. CABOT: Have you any impression about an opinion mentioned lately in literature, that tumors in the lung are getting commoner?

DR. MALLORY: I think the impression is widespread not only here but in Europe. In Vienna I was told that they had more cancers of the lung in the year 1926 than in the six years from 1900 to 1906. That statement was based on necropsy findings and consequently could not be interpreted as due to better diagnosis, which of course must be blamed for some of the apparent increase. I think there is probably not much doubt but that there is an actual increase and that it is rather widespread in a number of different parts of the world.

A PHYSICIAN: What was the redness and swelling of the back of the neck?

DR. MALLORY: I cannot tell you. Very possibly his cervical sympathetic was involved.

DR. CABOT: Did it show at necropsy?

DR. MALLORY: No. There was this large area on the scalp.

DR. CABOT: That was the wen, I take it.

DR. YOUNG: Yes, with some slight sepsis in it.

CASE 13472

A CASE OF RECURRENT CARCINOMA OF THE BREAST TREATED WITH X-RAYS

ROENTGENOLOGICAL DEPARTMENT

An unmarried American woman thirty-eight years old entered the hospital November 19.

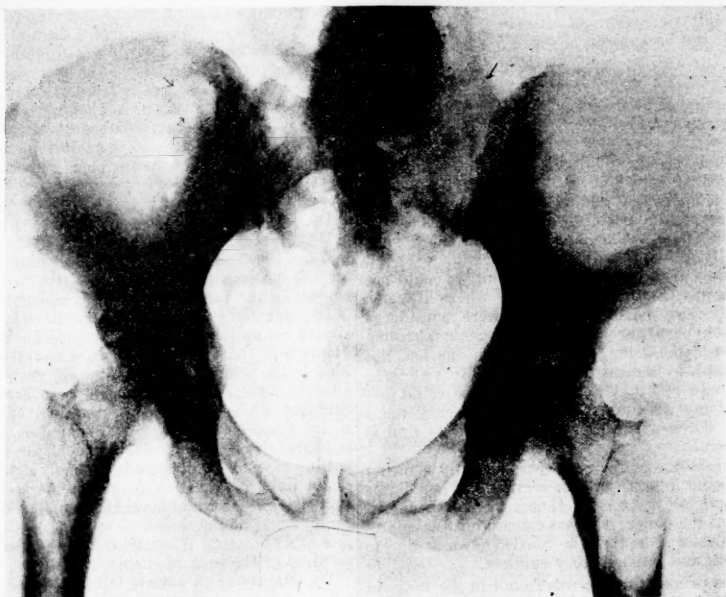
A year before admission she struck her right breast. Soon after that she noticed retraction of the right nipple. She thought there was a lump, but paid no attention to it. Some time

after this she noticed pains in the breast, occasionally referred down the right arm. For the past few months she had had some pains in her legs and back and a catching sensation in the hip joints. Two months before admission she noticed a sore around the right nipple. This had persisted. She did not consult a doctor until two weeks before admission. She entered now by his advice and not because she felt ill. She had lost 15 pounds during her illness.

Her family history is unimportant.

She had malaria some time ago. Recently she

teries normal. Blood pressure 130/86. Each breast was a hard, solid mass adherent to the skin. The right breast was firmly fixed to the chest wall, the left less firmly fixed. There was some ulceration around the right nipple, which was retracted. There was infiltration of the pectoralis muscle and of the skin around the breasts, especially between the breasts. There were hard red papules between the breasts. There were also hard glands in both axillae and in the right supraclavicular region. The abdomen was pendulous. Pelvic examination



Taken the day of admission. Shows a large area of destroyed bone in the upper half of the left side of the sacrum and similar smaller areas involving the right side of the sacrum, the upper ends of both femora and the lumbar vertebrae.

had had dysuria and had urinated once at night. Lately her appetite had not been good. She had had some recent shortness of breath. Eight weeks before admission and once before that time she had hemoptysis. The history was considered rather unreliable because of her lack of intelligence.

Clinical examination showed a woman with good color, the picture of health, very nervous, apprehensive and uncoöperative, making examination other than local unsatisfactory. Teeth extremely decayed. Pyorrhea. A long scar of a previous thoracotomy over the seventh rib on the left with dullness around this area. Percussion and palpation of the heart impossible because of the rigid overhanging breast. Sounds of fair quality. No murmurs. Pulses and ar-

teries normal. Blood pressure 130/86. Each breast was a hard, solid mass adherent to the skin. The right breast was firmly fixed to the chest wall, the left less firmly fixed. There was some ulceration around the right nipple, which was retracted. There was infiltration of the pectoralis muscle and of the skin around the breasts, especially between the breasts. There were hard red papules between the breasts. There were also hard glands in both axillae and in the right supraclavicular region. The abdomen was pendulous. Pelvic examination

showed the uterus in 2° retroversion, with a slight degree of prolapse. The pupils reacted sluggishly to light and distance. The knee-jerks were normal.

Urine normal. Blood not recorded. Wassermann negative.

Temperature 97.8° to 99.7°, pulse 80 to 105, respirations normal.

X-ray examinations of the pelvis showed a large area of destroyed bone in the upper half of the left side of the sacrum. There were similar smaller areas involving the upper ends of both femora and the lumbar vertebrae. (See illustration.) In the film taken of the chest there were localized areas of destruction in the ribs but no evidence of involvement of the lungs.

X-ray treatment was begun November 20. A

full erythema dose of high voltage X-rays was given through 20x20 fields to the front and back of the pelvis and a similar dose through 15x15 fields to each breast and axilla. The treatments were given in divided sittings and completed on December 11. There was no local reaction or roentgen sickness. November 24 she complained of marked pain in the sacro-iliac region. November 29 this was slightly less, and December 1 much less. December 12 she was up and December 13 walked. December 15 she was discharged, to return to the X-ray Therapy Clinic in six weeks.

January 25 the general condition of the patient was much improved. She walked without assistance. The pain in the lumbosacral region had been markedly relieved. There was slight pain on walking, practically negligible compared with what she had had. The indurated masses in each breast had softened considerably. There were some skin nodules in the midline, but the axillary glands had disappeared. There was epilation of the axillary hair and some of the pubic hair. She had not menstruated since her treatment. X-ray examination of the chest was not entirely satisfactory, but showed no evidence of metastasis in the lung fields. There was some mottling of the 9th, 11th and 12th ribs on the left and of the 9th and 12th on the right, evidently due to metastases. The areas of metastasis in the pelvis and the upper end of the femur were distinctly larger. There was some bone reaction about the large area in the left ilium. The area in the intertrochanteric region of the left femur was distinctly larger and represented a potential site of a pathological fracture. In view of the general improvement no treatment was given. She was told to return in two months.

March 8 X-ray examination showed no appreciable change in the appearance of the pelvis since the last observation. In the chest the changes were slightly more marked. Her general condition was unusually good. She suffered no pain. No reason could be seen for further treatment at that time.

April 5 and May 10 her general condition was still good. She was having practically no pain. No treatment was given.

June 21 X-ray examination showed no increase in the number or size of the areas of metastasis. The areas in the pelvis and the spine showed increased density suggesting bone reaction and sclerosis, probably due to the radiation treatment. She was remarkably well. She had very little pain over the sacro-iliac region. Both breasts were infiltrated with tumor, particularly the right, which appeared as though it would ulcerate before long. Further treatment was given, a full erythema dose to each breast and axilla, using a 20x20 field and short wave X-ray. The treatments were given in divided sittings. The last treatment was on July 2. June 28

there was a little serous discharge from around the right nipple.

August 2 there was marked improvement in her condition. There was some erythema over both breasts following the treatment. The hardened tumor mass present before was markedly softened, and the area which was about to ulcerate around the nipple was healed.

September 20 there was no appreciable change in her condition since the last observation except that she complained of pain in the left hip. A film of the pelvis showed some increased density of the bones, but this may have been due in part to the difference in the technique used. There had been no increase in the process and no change in the spine. The general condition was good. She was well nourished and walked with little discomfort. The condition of the breasts was unchanged since the observation of August 2. Deep therapy to the pelvis was given September 20 to October 5 (erythema dose, anterior and posterior pelvis).

DISCUSSION

BY GEORGE W. HOLMES, M.D.

This case seems to me to be of interest from three angles: (1) The long time that elapsed before she did anything. The importance of getting these people to the proper clinic early should be emphasized here. There is no question about the diagnosis. We do not need to go into the discussion of that. She evidently did not know the seriousness of the finding of a lump in the breast. There is need of more education along that line. She waited until a surgical cure was impossible, and we did what we considered to be the best palliative treatment, that is, treatment with high-voltage radiation.

(2) A patient with even an early carcinoma of the breast complaining of pains suggesting rheumatism or sacro-iliac trouble will often be found to be suffering from metastases to bone. These patients may go to chiropractors or osteopaths and submit to what is for them a dangerous form of treatment, because fractures are likely to occur with only slight trauma. We should be alive to the fact that spontaneous fractures frequently occur in these bones.

(3) A third point of interest is the method of handling these cases. We believe that any case that can be cured by an operation should have the benefit of surgery. In other words, a patient presenting herself at our clinic with a cancer of the breast is seen in consultation with a surgeon, a radiologist, and as many others as are necessary to make the diagnosis and to establish a plan of treatment. We believe it is important to do this early,—not to have one method tried and if that fails another tried, and a great deal of time wasted in that way. We believe all these things should be settled at the first visit of the patient if possible, and any method or combination which is most likely to cure the patient instituted at once. If a competent surgeon

is willing to say that he has reason to believe that he can cure the patient by operation, we believe that is the method of choice. If he is quite sure that he cannot remove the whole of the disease then we think the patient is better handled by radiation therapy.

If it is decided to use radiation therapy, the question of the kind of radiation would be brought up, how much, and how it should be applied. The shorter wave-lengths of X-rays obtained from modern high voltage apparatus are apparently better than longer waves such as we get from the ordinary installation. What we aim to do in most cases is to prolong life and make the patient more comfortable. We must not do anything that is going to make the patient less comfortable. We recognize that most of these cases are incurable, and what we are going to do is purely palliative, and should be carried out with that in mind. We do not try to give the treatment all in one sitting, which would cause radiation sickness. But we give a quarter or even a sixth of a full dose at each exposure. That means that the patient will have to come for ten or more visits. These visits may be spaced a day apart, and the various areas decided upon will be given a fraction of the dose at each visit. In that way it is possible to give the dose without making the patient sick. The only hardship is the travelling back and forth. We hope sometime to have beds, so that the patients can come in and remain in the hospital while the treatment is being given.

After the first treatment we can form an idea as to the value of further treatment. If the patient responds well to the first, we can expect that there will be some response to the second. It will not be so good as the first. If at the first there is no response, if there is just as much pain and the tumor remains the same, a second treatment is not justifiable. The best chance is the first time it is tried.

I have been speaking particularly of the primary lesion. The treatment of metastases can be handled in the same way. The result of treatment of metastases in bone in this case is not particularly striking. She got some relief, and there is some tendency to new bone formation at the site of the metastases. She really got some benefit. I think the most valuable thing in the treatment of bone metastases is relief from pain, and in a certain number of cases a slowing up of the process. In the primary lesion there is definite shrinking of the tumor with relief from pain and absence of ulceration. Before the days of irradiation these patients came in with large foul ulcerations which caused not only physical but mental suffering. Now we see none of that. Death is usually due to internal metastases.

This is a plate of the chest taken in March, when we had been following her about a year. She is a rather heavy, fleshy woman with large breasts infiltrated with cancer. We should ex-

pect the lower part of the chest to be rather less radiant than normal. The heart outline is distinctly seen. There are no mediastinal masses. In metastatic cancer of the lung we are likely to have enlargement of the hilus shadows with increased density in the lung itself or the accumulation of fluid in the chest. She shows none of these conditions. It is much more difficult to see the changes which take place in the ribs. Metastases in the ribs are difficult to show unless we have excellent plates taken especially for that, because the mottling of the overlying lung resembles them very closely.

The second plate, taken of the spine, and using a different technique, shows much better the metastases of the ribs,—these areas of diminished density scattered through the ribs, and in some of the ribs an increase in size. That is not the usual picture. Usually it is a localized area of bone destruction.

In the spine there is a similar appearance, with localized areas of diminished density which might easily be overlooked or attributed to gas bubbles or even to atrophy. The diagnosis of early metastasis to the spine is always difficult.

Here we see similar areas in the pelvis. The metastases to the bone may be a purely destructive lesion. It usually occurs more often in the flat bones than in the long bones, but may involve any bone in the body. The hands, the forearms and the legs from the knee down are usually free. This is a good point to remember in differentiating metastatic carcinoma from Paget's disease. The lesion itself may be purely destructive or it may be proliferative and destructive, or proliferative only, and the process may vary in the same patient. We must not be too optimistic about our treatment, because a process which has been purely destructive may show evidence of proliferation without treatment.

The next plate shows the condition of the patient in November, 1926. Here we see a large area of destruction in the sacrum close to the joint. This is quite a common appearance in metastatic malignancy, and could easily be the cause of sacro-iliac pain.

This is the last plate taken. One would have to use one's imagination a little to see any definite change. The area is perhaps a little more dense, but this is a considerably softer plate, and that would tend to intensify these areas of increased density.

I saw the patient recently. To see her gives a rather better impression of the result of our treatment than I have been able to give in the records. She certainly looks well after all this time. She still, of course, has evidence of cancer in her breasts, and the masses in her bones are there, but she is quite comfortable and able to carry on, and I do not believe she would have been if she had had no treatment.

DR. CABOT: She knows all about what this is, I suppose?

DR. HOLMES: Yes.

DR. CABOT: And that does not prevent her getting some enjoyment out of life?

DR. HOLMES: No. I used to feel that these patients should be told the truth. Lately I have not been so sure, because as Dr. Shattuck has said, we have to be very sure that we know the truth. I have seen two or three rather sad happenings because the patient was told that she had inoperable malignant disease and would live only a few months. It is very difficult to give a prognosis. The friends may ask how long the patient is going to live. I never make a definite statement. We do not know whether this woman will live two years or six months.

NOTE BY DR. CABOT

I am in hearty agreement with Dr. Holmes that we should never press upon patients our guesses about prognosis as if they were certain. Of course this has nothing to do with the question of veracity or honesty, but is a matter of scientific accuracy or refraining from saying what we do not know. There is no connection between the excellent habit of reserving our opinions until they are asked for and the habit of lying to patients recently advocated by Dr. Joseph Collins of New York.

DIAGNOSIS

Carcinoma of the breast.

STUDY CONDUCTED OF EYE INJURIES
TO WORKING WOMEN

SIXTY-ONE cases of eye injury out of a total of 3,285 accidents to women industrially employed in three States are reported in a recent study of the Women's Bureau of the United States Department of Labor under the title of "Industrial Accidents to Women in New Jersey, Ohio, and Wisconsin." In 59 of the 61 cases one eye had been affected and in two cases both eyes had suffered injury. The result was permanent disability in 20 cases, blindness of one eye in three, other permanent impairment of vision in 16, and affection of the central nervous system in one. The remaining cases had no permanent disability other than a nervous dread of accident.

COMPENSATION LAWS APPLY

Loss of one eye is classed as "permanent partial disability" in all three States. New Jersey and Ohio pay compensation for 100 weeks, and Wisconsin compensates for "loss by enucleation or evisceration" by payments for 160 weeks and for total blindness in one eye by payments for 140 weeks.

For temporary disability cases, New Jersey allows 66 2-3 per cent. of wages during disability (except for a waiting period of 10 days)

for not over 300 weeks, the weekly maximum to be \$12, the minimum \$6 or actual wages if less than \$6. Ohio also allows 66 2-3 per cent. of the average weekly wage (except for a waiting period of one week), for not to exceed six years, with a weekly maximum of \$15, a minimum of \$5 or actual wages if less than \$5, the total paid not to exceed \$3,750. Wisconsin allows 65 per cent., with a waiting period of one week which also is compensated if the disability exists for as much as four weeks; the maximum time for payments is 308 weeks; the weekly maximum is \$14.63, the minimum \$6.83.

In the Women's Bureau study, 37.7 per cent. of the injured women had been earning less than \$15 a week. In 42.6 per cent. of the cases the disability did not last as much as three weeks, but four cases were compensated as temporary over more than 20 weeks, one lasting for 101 weeks.

It is particularly significant that of the entire group of women the largest number receiving eye injuries were under 25 years of age (42.4 per cent.), only 11.9 per cent. being 40 years and over.

The metal industries were responsible for the largest number of accidents—31.1 per cent. of the total. All other manufacturing combined caused 47.5 per cent. of all; in stores, telephone exchanges and offices occurred 11.5 per cent., and 9.8 per cent. were in domestic and personal service.—*U. S. Daily.*

SUPPLIES FOR MISSIONARIES

AN appeal has been sent to doctors who have accumulated a supply of sample medicine to forward those which are not used to Dr. J. Williams, 25 West Broadway, New York City for distribution among missionaries.

It is presumable that only ethical preparations are wanted.

NEW MENTAL HYGIENE CLINIC, NEW
YORK CITY

A MENTAL-HYGIENE clinic, which is an outgrowth of the experimental clinic established in 1922 by the National Committee for Mental Hygiene in cooperation with the Association for Improving the Condition of the Poor, was opened in New York City on October 1. This clinic is operated jointly for and by the State Charities Aid Association, the New York Association for Improving the Condition of the Poor, and the Brooklyn Bureau of Charities. An annual budget of \$25,000 has been guaranteed for five years, half the funds being provided by the agencies and half by the Commonwealth Fund.—*Bulletin U. S. Children's Bureau.*

THE BOSTON Medical and Surgical Journal

Established in 1835

Published by The Massachusetts Medical Society under the jurisdiction of the following-named committee:

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The Journal does not hold itself responsible for statements made by any contributor.

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EXPLANATION REQUIRED FROM THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

THE BOSTON MEDICAL AND SURGICAL JOURNAL, in a recent editorial (November 17), commented on the proposed amazing advertising policy of the California Fruit Growers Exchange of Los Angeles, California. For the benefit of those who did not read or cannot recall this editorial or who failed to receive the propaganda with which the California Fruit Growers Exchange bombarded them, we will state again that this policy consists in an attempt, through wholesale advertising, to convince some 85,000,000 people in the United States that they are victims of "acidosis." They are urged to consult their physicians and the inference is obvious. California Sunkist oranges, moon kissed lemons or royal purple grape juice will be prescribed.

We hasten to deny that we hold any brief against the fruits of the California fields. We believe that they are among the finest in the world. We believe that the juice of California oranges, like that of Florida oranges or Porto Rico oranges, or Mediterranean oranges, is of

value in combatting acidosis. We do not believe that 85,000,000 people or even the most insignificant fraction thereof are suffering from acidosis. We believe that this advertising campaign of the California Fruit Growers Exchange is a barefaced and outrageous attempt to underwrite the medical profession for the purpose of increasing the sales of California fruits. We are reminded of various obnoxious attempts to frighten the public with "halitosis"; to threaten it with "pyorrhoea"; to convince it that it is "colonie" (whatever that means); to classify "as septic cases" (on presumed medical authority) those unfortunates who are afflicted with bromidrosis; to suggest to it that a pain in the back is a symptom of kidney disease.

The California Fruit Growers Exchange submitted, with its other propaganda, the text of an advertisement which, it was claimed, was to appear in *The Journal of the American Medical Association*. We assumed that *The Journal of the American Medical Association* would indignantly deny that it had entered into contract to print this advertisement. What is our surprise, however, to find page 33 of the advertising department of our national journal for November 5 given over to this same advertisement, under the heading "Over 38 Million Pages, Doctor, in the *Saturday Evening Post*, *Literary Digest*, *Collier's Weekly* and *Liberty Magazine* to Send Patients to you for Treatment of 'Acidosis'."

Sample paragraphs follow:

"We, the Sunkist Orange and Lemon Growers of California, believe that the subject of Acidosis, and the prevalent American diet fault that is probably the main cause of this trouble, should be better understood by the public at large.

"We believe that the Medical Profession can render great relief to additional hundreds of thousands who are affected if these persons actually can be brought into the doctors' offices for diagnosis and advice."

And again:

"The purpose is apparent in these pages. Oranges and lemons are given adequate attention. 'Acidosis' symptoms are explained. All readers are urged to 'see their doctors' in every case that is in any way abnormal."

The California Fruit Growers Exchange, we believe, is honest in its intentions. It wishes to sell more California fruit. Its advertising methods are bred from ignorance of professional ethics and the true nature of acidosis. *The Journal of the American Medical Association* has no such excuse, and its reasons for accepting this blurb are a mystery, particularly in view of the occasional policies of its Advertising Bureau in forbidding subscribing Journals to accept the advertising matter of such reputable preparations as Phillips' Milk of Magnesia and Patch's Cod Liver Oil. (The latter is now acceptable, as it should always have been.)

We trust that *The Journal of the American Medical Association* will cause the withdrawal of this advertisement or give acceptable reasons for its publication.

FEET OF CLAY

A MAGNIFICENT idol fashioned by Aschoff¹ and his followers, the reticulo-endothelial system, has been found by Mallory² to have feet of clay. The importance of the reticulo-endothelial system in the problems of immunity and the careful studies of Sabin, Lewis and others on the various types of mononuclear leukocytes derived from endothelial and mesenchymal cells has served to further emphasize the importance of reticulum and the cells that form it. Unfortunately for reticulum, the conclusions based on Bielechowsky's silver stain, used extensively for its detection, have been shown to be not entirely accurate. The black stain given characteristically by this method to reticulum has been shown by Mallory to be a reaction characteristic of delicate collagen, and that instead of being a stain characteristic for reticulum and distinguishing it from collagen the silver method merely differentiates collagen in one physical state from collagen in another.

The use of a large number of stains of special value for the demonstration of collagen has shown that reticulum, so-called, is merely collagen and that instead of having an elaborate system of reticulum cells we have merely fibroblasts. This is an extremely important finding and shows that many of our ideas relative to the reticulo-endothelial system will have to be revised. It also serves to illustrate the danger of depending on a single histological method for building up an elaborate hypothesis.

The beautiful photographs with which Mallory has illustrated his article are deserving of very careful study and are valuable not only from the point of illustrating his findings, but also in showing the great value of technical excellence in providing sound data from which deductions may be drawn.

This contribution of Mallory's should do much to aid in evaluating properly the role played by the so-called reticulo-endothelial system in the body.

REFERENCES

- 1 Aschoff, L.: *Lectures in Pathology*, New York; 1924.
- 2 Mallory, F. B.: *American Journal of Pathology*, III, No. 5, 515.

SHALL ALL DRIVERS OF AUTOMOBILES WHO HAVE KILLED PERSONS BE GIVEN PRISON SENTENCES?

THE New York Times publishes a letter from an unfortunate victim of an automobile accident in which the suggestion is made that every driver who kills or seriously injures a person should be sent to prison. Without doubt every reasonable effort should be made to diminish the deaths and the far greater number of disabilities due to the use of automobiles, but it is unreasonable to blame the driver in all cases.

Since Society has accepted the automobile and provided certain regulations with respect to its legal standing, the driver must be given protection when he is not blameworthy. While it is evident that many accidents are due to incompetent drivers, it is equally true that other persons are wholly to blame. To most drivers much credit is due for the care and ingenuity shown in safeguarding other travelers, both in vehicles and on foot.

We agree that the driver who kills should be subjected to the most careful scrutiny and if wholly to blame the imposition of a prison sentence is just.

An arbitrary law wholly mechanical and inelastic is contrary to all conceptions of justice. There may be degrees of responsibility for any act. One may be wholly to blame, or partly to blame because of contributory carelessness by the victim. Those who use automobiles are entitled to protection if the victim of an accident is wholly responsible. No driver can foresee the behavior of some persons especially those of early life, and no car can be brought to an immediate stop. Even if it could, the danger might be transferred to occupants of vehicles behind.

The drunken or half-witted driver may bring upon himself a fatal accident which the unreasonable person might attribute to a surviving driver but no fairminded person would want to send the innocent participant in the accident to jail. Even the great number of fatalities due to automobiles should not lead to general condemnation, for careful observation of traffic shows that the great majority of drivers show skill and commendable regard for the safety of others. Sympathy for an unfortunate sufferer must not make justice blind.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

LOCKE, EDWIN A. Ph.B., A.M., M.D. Harvard Medical School 1901, Clinical Professor of Medicine at Harvard Medical School, Visiting Physician at Boston City Hospital, Physician in Chief at the Boston Sanatorium, Associate Director at the Sharon Sanatorium. His subject is: "Five Cases of Spontaneous Rupture of the Heart." Page 955. Address: 311 Beacon St., Boston.

HAWES, JOHN B., 2ND. M.D. Harvard Medical School 1903, President of the Boston Tuberculosis Assn., Formerly Consultant in Diseases of the Chest of the New England District U. S. Veterans' Bureau, Secretary of the Division of Tuberculosis State Dept. of Health. His subject is: "The Relation of Infections of the Up-

per Respiratory Tract to Chronic and Sub-Acute Infections of the Lungs." Page 961. Address: 11 Marlboro St., Boston.

EAVES, LUCILE. A.B., M.S., Ph.D., Formerly Instructor at Stanford University, Research fellow, lecturer and member of the summer session faculty at the University of California and Associate Professor at the University of Nebraska, Now Professor of Social-Economic Research at Simmons College and Director of the Research Department of the Women's Educational and Industrial Union, Boston. Her subject is: "Local Variations in Cancer Mortality." Page 964. Address: 264 Boylston St., Boston.

THORNDIKE, AUGUSTUS, JR. M.D. Harvard Medical School 1921, Junior Assistant Surgeon at the Children's Hospital and Assistant Surgeon at the Milton Hospital. His subject is: "A Type of Plaster Spica Useful in the Convalescent Treatment of Fractures of the Femur." Page 978. Address: 66 Commonwealth Ave., Boston.

GRABFIELD, G. P. A.B., M.D. Harvard Medical School 1915, Associate in Medicine at the Peter Bent Brigham Hospital, Instructor in Pharmacology at Harvard Medical School and Consultant in Medicine at the Boston Psychopathic Hospital. His subject is: "The Pathogenesis of Chronic Bronchitis and Its Treatment with Quinine Derivatives." Page 979. Address: 23 Bay State Rd., Boston.

STRONG, LEONELL C. Ph.D., Associate Professor Mammalian Genetics and Research Associate of Cancer and other Growth Processes at the University of Michigan. His subject is: "An Historical Reference to the Use of Liver in the Treatment of Disease." Page 981. Address: 827 McKinley Ave., Ann Arbor, Mich.

KIRKWOOD, ROBERT J. M.D. Harvard Medical School 1925, Surgical internship at the Boston City Hospital 1925-1927. Now engaged in practice of general surgery. His subject is: "Spontaneous Amputation of Appendix." Page 982. Address: 554 Broadway, South Boston.

CHEEVER, AUSTIN W. A.B., M.D. Harvard Medical School 1914, Chief of Service Skin and Syphilis Department of the Boston Dispensary, Dermatologist at the Cambridge Hospital and the Brockton Hospital. His subject is: "Progress in Syphilis, 1926." Page 982. Address: 472 Commonwealth Ave., Boston.

MUDD, SEELEY G. B.S., M.D. (See page 940, issue of November 17, for further information). Address: 1206 Pacific Mutual Bldg., Los Angeles, Calif., and

SPRAGUE, HOWARD B. A.B., M.D. Address: 270 Commonwealth Ave. A continuation of "Cardio-Vascular Review for 1926." Page 987.

The Massachusetts Medical Society

SECTION OF OBSTETRICS AND GYNECOLOGY

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The Treatment of Incomplete Abortion.

By definition abortion signifies interruption of pregnancy, regardless of cause, at any time up to and through the sixteenth week. The earlier it occurs the more likely it is to be of the complete type, with the entire ovum expelled together with the decidual lining of the uterine cavity. As pregnancy advances the more likely becomes the possibility that parts of the ovum or decidua will be retained, giving rise to the condition known as incomplete abortion.

Diagnosis as to the completeness of expulsion of the uterine contents can be made only by direct examination of these by the physician. This condition, unfortunately, is often not fulfilled, in that such pieces of the ovum as may have been passed usually disappear in the water-closet bowl or are otherwise disposed of by the patient. However, prompt cessation of uterine bleeding points to the probability that the ovum has been expelled complete, whereas persistence of the bleeding, especially if of appreciable quantity and accompanied by the passage of liver-like bits of decidua, indicates incomplete emptying of the uterus.

The treatment of incomplete abortion depends upon its recognition and the question of infection of the retained products of conception. Because of the ever-present possibility of infection, especially in abortions criminally induced, the etiology of the condition should be ascertained, if possible, and the temperature, pulse rate, and general physical condition of the patient determined as soon as seen. If the physician will keep these points in mind he will avoid many serious errors in treatment which would otherwise be almost certain to involve him in needless complications.

The clean ease of incomplete abortion should have the uterus gently and thoroughly emptied. The patient should be in the hospital, whenever possible, and the entire treatment undertaken with scrupulous surgical asepsis. The genitalia should be shaved and the bladder and rectum emptied before the patient is transferred to the operating room. She is then anesthetized, the genitalia prepared externally by painting over with ether followed by 3½% iodine, and the field of action surrounded with sterile drapings. The physician's hands should be scrubbed and disinfected as thoroughly as for a laparotomy, and freshly boiled rubber gloves should be worn. The vagina should then be explored and freed

of blood, clots, and pieces of the ovum, by gentle sponging. A finger should then be passed in through the cervix, which, if necessary, should be gently dilated with a glove-stretcher, to permit such a move, and any remnants of the ovum swept off the uterine wall and down through the cervix. If the finger meets with any particles which it cannot dislodge the gentle use of a *dull* curette of the Reynolds type will usually suffice for the purpose. Some bleeding will inevitably accompany this manipulation but will stop promptly when the emptied uterus contracts and retracts. Pituitrin and ergot administered intramuscularly in ampoule form are useful to aid retraction, but only after the uterus is empty.

This treatment, useful though it is in the clean case, is absolutely wrong when uterine infection is present, for infection would thereby be disseminated far beyond its original localization. One indication only justifies us in exploring and cleaning out the interior of a uterus with an infected incomplete abortion, and that indication is hemorrhage so severe as to endanger the patient's life if it be not immediately controlled. Fortunately this is rare, so that the treatment of the ordinary infected case is medical primarily, in order to limit and subdue the infection. Supportive treatment with rest in bed, fresh air, abundance of plain nourishing food, forcing of fluids, and daily bowel-action, is most important, together with ice over the lower abdomen and dram doses of ergot 4 i.e. When the infection has subsided the uterus will frequently have emptied itself, and no further treatment will be necessary; at all events in any case where severe hemorrhage does not complicate the picture the uterus should not be explored until the temperature has been at a flat normal level for at least a week.

Questions of a similar nature to the above will be discussed in the JOURNAL each week. They may be addressed to the Clerk of the Committee, in care of the JOURNAL and will be answered by members of the Committee of the Section of Obstetrics and Gynecology.

MISCELLANY

THE ANNUAL CONFERENCE OF THE SECRETARIES OF THE STATE MEDICAL SOCIETIES

This meeting was called to order at the Building of the American Medical Association in Chicago soon after the appointed hour, Nov. 18, 1927, by Dr. Olin West, Secretary of the American Medical Association, who cordially welcomed the delegates and placed the resources of the association at the services of the members. He called for nominations for the office of chairman and after the call for Dr. A. T. McCormack he was unanimously elected.

After thanking the gathering in a becoming address for the honor conferred he introduced Dr. Jabez N. Jackson, President of the A. M. A., who spoke

on matters of general interest to the profession. He urged the further development of a powerful cohesive organization of physicians throughout the country to the end that there shall be established unity of purpose which will be recognized by the people. Attention was called to the amazing mass of knowledge with respect to medicine which has been acquired in comparatively recent years and that the time had come when it behooves physicians to pause and apply the mental digestive process to the facts just as the physical body has to have periods of digestion and assimilation of food. Just as continuous eating would imperil physical health so the human mind must be given time to assimilate the great and valuable accumulation of knowledge before it attempts to apply imperfectly correlated scientific facts. In other words information must not be confused with education for the latter term implies a knowledge of the relativity of facts.

He urged the development of fraternal relations among doctors not only because it is desirable to cultivate social qualities but also because the time is coming, if not already here, when the encroachments of state governmental and public invasion of the practice of medicine must be met. The rights of the practitioner must be protected and the public must be led to understand the great debt which humanity owes to medicine.

General medical practice has been undergoing readjustment because of the triumphs of preventive medicine for there was a time when the more common troubles provided a comfortable living for the family doctor so that new sources of income must take the place formerly occupied by typhoid fever and some other communicable diseases.

He felt that without exception no profession had done as much for the masses as that of medicine. The menace of charity hospital service, when well-to-do patients are treated free, must be eliminated using in this argument the testimony of a New York surgeon who told him that he was paid on the average for only eight out of one hundred operations.

In order to foster the social side of the doctor's life he felt that the wives of doctors should participate in all but the scientific functions of medical meetings. This led up to an endorsement of the Woman's Auxiliary which has great possibilities for good.

Dr. W. C. Woodward, Executive Secretary of the Bureau of Legal Medicine and Legislation of the A. M. A., was the next speaker. His subject was "The Basic Science Law" which was handled in a clear and interesting way. This law has been adopted by five states and is designed to meet defects in the registration law in those states where better law cannot be enacted or enforced. Dr. Woodward did not suggest the basic science law as a solution of all the troubles incident to medical licensure, but it seems to operate to advantage in establishing a premedical educational standard which would promote better preparation for the study of the art of medicine. The requirements in the basic science law vary in the states which have adopted this scheme as shown in the different subjects in which the applicants are examined. Dr. Woodward believed that examination under the basic science law in anatomy, physiology, chemistry, bacteriology and pathology would cover the range of subjects which should be included.

The arguments in favor of this law seem to be that since the examiners are not practitioners of medicine there is less ground for that opposition which is based on the fear that examining physicians will not be fair to the applicants.

Successful applicants for examination under this law are thus eligible for examination by the boards which deal with the art of practice, but even these boards may be at liberty to ascertain for themselves the ability of the applicant with respect to the

subjects which has been used in the previous examination.

The most active opposition to this law comes from the chiropractors, but is in evidence with osteopaths in some places.

Before discussion of this paper was asked for, the chairman introduced Mrs. McReynolds, President of the Woman's Auxilliary of the American Medical Association. He asked the meeting to extend the courtesies of the floor to her and several other ladies who were in the audience. Mrs. McReynolds expressed her pleasure at meeting the doctors and told of the aims and dolings of her organization. Her presentation of the subject seemed to meet with cordial approval, for the applause was more than an act of chivalry.

A communication from the Board of Trustees urging the State Societies to notify the members of Congress of the Ways and Means Committee that the medical profession felt that the cost of attending medical meetings should be deducted from the taxable income was presented by Dr. Pettit. He read the list of names on this committee. For Massachusetts Mr. Treadway's name was given.

The discussion of Dr. Woodward's paper was animated and many facts were presented. The dangerous situation in Washington, D. C., where a chiropractic bill has been passed in the House and is now before the Senate committee was referred to by Dr. Conklin. This is especially trying to the Washington doctors for they are powerless to act in any effective way since they have no voice in the election of senators or congressmen, but the question has national significance because endorsement by the National law-making body would give the chiropractors influence in efforts to extend state recognition. The American Medical Association has been represented before the Committee of the Senate.

The meeting adjourned at 12:30 and delegates and guests were entertained at luncheon furnished by the American Medical Association.

The afternoon meeting was called to order on time and the last subject on the morning's program which had not been reached was taken up.

Dr. J. B. Morrison, Secretary of the Medical Society of New Jersey, reported the series of meetings which were held by delegates from New Jersey, New York and Pennsylvania, members of a tri-state conference, for the discussion of subjects of common interest. Six conferences have been held at which many of the questions of the day relating to medical education, licensure, ethics, administration of laws, etc., have been discussed. The reader presented cogent arguments for the meeting of representatives of states in close association for the purpose of promoting coöperation and helping to solve common problems.

Representatives of New York and Pennsylvania endorsed the arguments of Dr. Morrison. This paper will be published in the bulletin of the A. M. A. and should be read by all who desire to know or can be made to realize the importance of such organizations.

Dr. W. P. Bowers of Massachusetts and Dr. D. E. Sullivan of New Hampshire reported the formation of a similar body made up of delegates from the New England states. Very general interest has been shown in this project in New England and it is expected that much good will result.

Several speakers emphasized the wisdom of dealing only with questions of importance in such bodies and that care should be exercised that matters of purely local interest should not be given attention to the exclusion of weighty subjects.

Professor N. S. Thayer, President-elect of the American Medical Association, was called upon to address the meeting. The outburst of applause on

the mention of his name was evidence of the approval of his election to the high office which he is called to fill. In a charming and delicate manner he referred to some of the dangers incident to the advances in medical knowledge and medical education using as illustrations the unwise employment of surgical procedures by unskilled operators following the safety conferred by asepsis and the over-confidence in laboratory diagnosis brought about by the improved technic of skilled research workers.

With it all, however, he is convinced that the creation of small suburban hospitals and the training of men who work in them is correcting some of the over-enthusiasm and venturesome spirit of a few years ago. One especial benefit is found in the better education of the laity in smaller places so that they are able to discriminate in the choice of surgeon or internist.

He wished that the profession could be led to realize that the personal relation of the doctor to his patient is one of the most important features of practice and service of high value often consists in establishing that confidence which makes a bond of sympathy between the doctor and patient.

(To be continued)

SURVEY AND TABULATION OF PATENT MEDICINE ADVERTISEMENTS APPEARING IN BOSTON NEWSPAPERS

This is a survey made during one of the months early in 1926 and varies very little in comparison with present condition. Only the advertisements of the so-called proprietary drugs were taken. Toilet preparations, such as soaps, shampoos and tooth pastes, were not included, although many of them were alleged to have medicinal value.

The name of each drug advertised was taken down, separate lists being kept for each paper. A total of 313 advertisements was noted in this way, divided among the different papers as follows:

Post	114
Advertiser	62
Globe	48
Herald-Traveler	42
American	37
Transcript	10
Total	313

One hundred and forty-six different drugs were contained in these 313 advertisements. When compared to the records and reports of the Bureau of Investigation of the American Medical Association, the following results were revealed:—

1. "Reliable Products and Properly Advertised"	1
2. "Products advertised by methods open to serious objection, yet composition not likely to be serious menace to public"	12
3. "Products, advertised by quackish methods," according to principles of Medical Ethics	94
4. Products not known to or investigated by American Medical Association	39
Total	146

The number of different newspapers in which the same drug was advertised is indicated by the following table:

Advertisement appeared in 1 newspaper	64
Advertisement appeared in 2 newspapers	34
Advertisement appeared in 3 newspapers	20
Advertisement appeared in 4 newspapers	18
Advertisement appeared in 5 newspapers	10
Advertisement appeared in 6 newspapers	1
Total	147

Classification	Post	Advertiser	Globe	Herald-Traveler	American	Transcript	Total
1. Reliable Products and Properly Advertised	1	0	1	0	0	0	2
2. Products Advertised by Methods Open to Serious Objection, yet Composition not Likely to be Serious Menace to Public	8	8	4	5	5	2	32
3. Products Advertised by Quackish Methods According to the Principles of Medical Ethics.	76	45	35	30	29	6	251
4. Products not known to or investigated by American Medical Association	29	9	8	7	3	2	58
TOTALS	114	62	48	42	37	10	313

These facts are apparently of little concern to most newspapers. Frequent criticism of newspaper advertisements which have appeared in this Journal have had no influence so far as has been observed by reading the advertisements, although the attention of

some Editors has been called to our comments. The financial policy of one of our largest daily newspapers is controlled by persons who do not live in this vicinity.

CERTAIN FEATURES OF THE CANCER DEATH RATE IN MASSACHUSETTS

Dr. Herbert L. Lombard finds after a study of cancer death rates in Massachusetts that this rate is much higher among the foreign born and their descendants than among the native and their descendants. Dr. Carl Doering, Assistant Professor of Vital Statistics at the Harvard School of Public Health, has assisted Dr. Lombard in this survey.

The adjusted rate among the foreign born and their descendants is 137 per 1,000 and 160 among persons both of whose parents were foreign born, 141 among persons with one foreign born parent, and 85 among the native born with native parents.

Eliminating the foreign born there seems to be no difference in the rate in cities as compared with rural districts, hence density of population is not a factor in this death rate, and tends to disprove the theory that cancer is contagious.

HARVARD MEDICAL SCHOOL NEWS

A formal ceremony was held at the Warren Anatomical Museum on Nov. 18, 1927, at 4:30 o'clock. At this time a framed portrait of Dr. William Fiske Whitney, former curator of the Museum, was unveiled and presented to the Harvard Medical School.

Dr. Burt Wohlbach introduced Dr. George Burgess Magrath, who presented the painting. Dr. Magrath outlined his contact with Dr. Whitney, first as a student and later as a colleague. He portrayed Dr. Whitney as a pioneer clinical microscopist, a councillor of surgeons, a gentleman.

Dr. Edsall, dean of the Medical School, received the portrait in the name of the school. He showed that Dr. Whitney, in his 42 years of service from 1879-1921 as curator, made the museum what it is today, and yet through all the hard work carried himself graciously and kindly.

Tea was served at the close of the exercises.

MANY CHILDREN IN DISTRICT OF COLUMBIA FOUND WITH PHYSICAL DEFECTS

A recent report of the District of Columbia health officer indicated that 95 per cent. of the kindergarten and first-grade children in the public schools of the District had physical defects in need of correction, the Bureau of Education, Department of the Interior, has just stated.

A total of 41,776 physical examinations were

made by medical inspectors during the year 1926-27, but on account of the inadequate force only the younger children, 3,761, could be given thorough examinations. Of these 67.8 per cent. were found to have defective teeth; 46.7 per cent., diseased tonsils, and 33.2 per cent., enlarged cervical glands.

Among other defects noted were: Poor nutrition, 24.3 per cent.; defective nasal breathing, 21.9 per cent.; defective vision, 12.3 per cent.; orthopedic defects, 10.9 per cent.; anemia, 9.1 per cent., and cardiac disease, 2.3 per cent. Of 124 children reported as retarded in their classes, 120 were found to have some physical defect.

The health department also examined 1,095 applicants for appointment as teachers, and only 366, or 33.4 per cent., were passed unconditionally.—*U. S. Daily.*

THOROUGH COOKING OF PORK ADVISED

DEPARTMENT OF AGRICULTURE URGES THAT PRECAUTIONS BE TAKEN TO PREVENT DISEASE

ALL pork not bearing the Federal stamp should be thoroughly cooked before eating in order to avoid trichinosis, the Department of Agriculture says.

Federally inspected meat products that are intended to be eaten without cooking are prepared in a safe manner. Consequently, any pork products bearing the Federal stamp are safe. Most cases of trichinosis occur on farms and in rural districts. Outbreaks also have occurred in cities, especially among families which retain the food habits of countries where pork is commonly eaten uncooked.

Products that are especially likely to contain trichinae are raw pork in any form, smoked and dried sausage, and articles of food containing pork that has not been thoroughly cooked. Frequently an entire family may be stricken, the disease being painful and frequently fatal.

To make pork safe all that is necessary is to cook it until it reaches the stage known as "done," which is also the stage at which pork is most palatable to the average person. Since heat penetrates slowly into meat in the process of cooking, large pieces that are cooked on the outside may be imperfectly cooked at the center.

—U. S. Daily.

RECENT DEATHS

DUNN—ARTHUR W. DUNN, Director of the Junior Auxiliary of the Red Cross, died in Washington, November 15, 1927.

He has held office since 1920 and was previously executive secretary of the Public Education Association of New York City. Under his leadership the American Junior Red Cross developed a membership of nearly 6,000,000 school children. He was recognized as a prominent character in educational and civic betterment movements, being the author of many books on civics and government.

BISBEE—DR. ERNEST SYDNEY BISBEE, a graduate of the University of Pennsylvania Medical School, and practitioner in the South End of Boston for many years, died in Boston November 15, 1927, at the age of 52. He was a native of Oldtown, Me. After coming to Boston as a young man, he was in the drug business with the Sawyer-Capper Drug Company at the corner of Ruggles and Tremont Streets, later studying medicine. He joined the Massachusetts Medical Society in 1914 and was also a member of the American Medical Association.

CORRESPONDENCE

EXPERIENCES IN A UNITED STATES VETERAN'S HOSPITAL*

"I am acquainted with this Hospital only so far as this ward is concerned, but I suppose the whole hospital is run in the same way. Furthermore I am in no position to make comparisons but I am glad to tell what I do know and have experienced. The Fitzsimmons General Hospital is a United States Army Hospital, of which there are very few in the Country. This is the largest and best equipped and undoubtedly has the best personnel. They take Veterans' Bureau patients (for which the Veterans' Bureau pays at the rate of \$1.25 per day) regular army men, active and retired, navy men, civilians, in fact anybody. The patients are treated with the same respect and courtesy, and given individual treatment, just the same as if they were in any good hospital paying \$5 or \$10 a day. The doctors are fine men, specializing in various branches—conscientious men, interested in their profession and in their patients. This ward (4 rooms, 1 building) has a Ward Surgeon who has charge of us (20 men). He visits each one of us twice a day and does all he can to make us comfortable and happy, always ready to serve in any way. In addition, we have two day nurses and one night nurse and about six orderlies. The patients are well classified, and are cared for accordingly. In a ward where all are strictly bed patients, they would need more help than here where we are able to move about and do some things for ourselves. There are some patients here who were unhappy and discontented elsewhere but are satisfied and contented here. There seems to be the best of feeling between the personnel and patients. I have not yet heard a word of dissatisfaction. Everything

*Extracts from a letter written to Dr. E. H. Bigelow.

is well ordered and runs smoothly and every one falls in line. When rest hours come around everything becomes quiet, not a word is spoken by patients or those in charge showing how well every one coöperates. The food is of the best and we are given a choice of things to eat at each meal. It is well prepared and well served. If you are not satisfied with what you get, you may have something else and as much as you like. Patients are often fussy and fickle. When a patient comes here, he is given a thorough examination, practically every test known to medicine and when the doctors get through they know the condition of the patient. For instance, a man may come in for T. B., but he may have some other trouble that he knows nothing of which may be retarding his progress. All those examinations are done by specialists along their line, one man throat, another eyes, another stomach and so on. I am well satisfied here and I think every one is. I feel as though I were getting the most excellent care and treatment. If we can feel like this we have a better chance of getting well than if we were discontented and unhappy."

NEWS ITEMS

THE WORCESTER DISTRICT—Dr. Edward P. Disbrow, former assistant superintendent of the Worcester City Hospital, has entered private practice in Worcester at 36 Pleasant Street. Dr. Disbrow is limiting his practice to dermatology.

Dr. Harry N. Kelley has opened an office at 847 Main Street, Worcester.

Dr. Ralph S. Perkins has moved his office in Worcester to 27 Elm Street.

Dr. Samuel Gwynne has moved his office to 5 Irving Street, Worcester.

Drs. Earl E. Fipphen and William F. Holzer of Worcester have been appointed medical examiners for the Division of Aeronautics of the Department of Commerce. They will have charge of the medical examinations of air pilots applying for Federal air licenses in Central Massachusetts.

Dr. G. Alston Tripp has been seriously ill at his home in Worcester. He is now convalescent.

THE ELECTION OF DR. MACIVER AS SUPERINTENDENT OF THE WORCESTER CITY HOSPITAL—Dr. George A. Maciver, who has served the Massachusetts General Hospital as assistant superintendent for some time, has been elected to be Superintendent of the Worcester City Hospital.

Dr. Maciver succeeds Dr. Charles A. Drew who resigned on January 1, after a long period of service.

Dr. Maciver is a graduate of the medical school of the University of Vermont. He served overseas during the World War having the rank of Major at the time of his discharge. He was previously physician on the staff of the Worcester State Hospital.

THE FREE HOSPITAL FOR WOMEN CAMPAIGN FOR FUNDS—About fifty-nine thousand dollars have been secured by the drive for funds for the Free Hospital for Women. The objective is two hundred thousand dollars.

THE CAMBRIDGE HOSPITAL DRIVE—The people of Cambridge are trying to raise three-fourths of a million dollars for the Cambridge Hospital. This will not be difficult because almost at the very opening of the movement one-half a million dollars have been subscribed.

This fund will, when added to the present endowment, make this institution self-supporting for some years to come.

THE BOSTON CANCER EDUCATION COMMITTEE—The Council of Social Agencies has named a committee under the title used in the heading above to disseminate information regarding cancer. The activities of the group will relate themselves to the Boston clinics which cooperate with the cancer program of the State Department of Public Health. This committee met for organization November 15, 1927, at the Women's City Club of Boston. Dr.

Robert Greenough, Commissioner Bigelow, Dr. Harry C. Saltzstein of Detroit, Dr. Mary R. Lakeman and Mr. Robert Kelso addressed the meeting.

The committee consists of: J. A. Lowell Blake, Mrs. E. A. Codman, Mrs. J. A. Gookin, Mr. W. H. Hardy, Mr. Horace Morison, Miss L. V. Robinson, Dr. F. G. Balch, Mr. Arthur Rotch, Mrs. J. H. Sherburne, Mr. J. J. Thillinghast, and Mrs. R. C. Sturgis.

DISEASE INCIDENCE IN CONNECTICUT
WEEK ENDING NOVEMBER 12

	1927					1926			
	Week ending October 22	Week ending October 29	Week ending November 5	Week ending November 12	Average cases reported for week corresponding to November 12 for past seven years	Week ending October 23	Week ending October 30	Week ending November 6	Week ending November 13
Actinomycosis	-	-	-	-	-	-	-	-	-
Anthrax	-	-	-	-	-	-	-	-	-
Botulism	-	-	-	-	-	-	-	-	-
Cerebrospinal Men.	1	1	-	-	-	-	-	-	-
Chickenpox	41	59	65	122	56	49	79	81	118
Conjunctivitis, infec.	-	1	-	-	-	-	-	-	1
Diphtheria	29	32	21	30	70	26	28	26	24
Dysentery, Amoebic	-	-	-	-	-	-	-	-	-
Dysentery, Bacillary	1	1	-	-	-	-	1	-	-
Encephalitis, Epid.	1	1	-	-	-	1	1	1	1
Favus	-	-	-	-	-	-	-	-	-
German Measles	1	1	-	1	1	2	1	2	1
Hookworm infection	-	-	-	-	-	-	-	-	-
Influenza	-	3	-	6	4	-	5	7	2
Leprosy	-	-	-	-	-	-	-	-	-
Malaria	-	1	-	-	-	-	-	1	-
Measles	2	11	9	25	56	20	11	6	9
Mumps	21	22	10	97	14	1	6	8	3
Paratyphoid Fever	1	1	4	2	-	1	-	-	-
Pneumonia (Broncho)	16	11	18	20	17*	13	15	23	12
Pneumonia (Lobar)	17	20	35	24	23	14	16	18	26
Polioomyelitis	9	9	7	3	1	1	4	-	-
Scarlet Fever	30	36	45	45	72	31	46	47	65
Septic Sore Throat	-	1	1	2	-	2	76	1	-
Smallpox	-	-	-	-	-	-	-	-	-
Tetanus	-	1	1	1	-	-	-	-	-
Trachoma	-	-	-	-	-	-	-	-	-
Trichinosis	-	1	-	-	-	-	-	-	-
Tuberculosis (pul.)	45	48	26	27	26	27	30	16	26
Tuberculosis (o.f.)	-	3	1	2	3	-	-	2	1
Typhoid Fever	4	6	6	3	6	4	4	4	4
Typhus Fever	-	-	-	-	-	-	-	-	-
Whooping Cough	50	61	73	65	38	29	59	30	52
Gonorrhoea	22	47	34	17	25	16	19	37	46
Syphilis	28	38	34	22	28	8	12	21	36

*Average for two years. Made reportable January 1, 1925. Remarks: No cases of cholera, Asiatic, glanders, plague, rabies in humans and yellow fever during the past seven years.

REPORTS AND NOTICES OF MEETINGS

MEETING OF THE PLYMOUTH COUNTY HEALTH ASSOCIATION

THE fall meeting of the Plymouth County Health Association was in order at the County Tuberculosis Hospital in South Hanson on Wednesday afternoon, November 2. Mr. Frederick T. Bailey of Scituate, chairman of the county commissioners, is also president of the association and called it to order. Routine work included reports of secretary and treasurer and the chairmen of various committees. For the camp committee Dr. J. Holbrook Shaw reported that additions to the permanent structures of the summer camp, which is located on the hospital grounds, included a recreation building, capable of providing for some 70 children. Miss Anna J. Foley, R.N., executive secretary, noted that the 70 children were cared for during a period of eight weeks, with a total weight gain of 330 pounds, the boys gaining about one pound more each than the girls. The children represented fourteen towns. The membership in the association is nearly 600 and it is expected that in the coming year it will touch 1,000. The Christmas seal sale figures out about nine cents per capita of population.

Mr. Frank Kiernan, executive secretary of the Massachusetts Tuberculosis League, outlined the history of the Christmas seal, taking pains to give credit to the Red Cross, which in the earlier years instituted this method of raising money and devoted the proceeds strictly to tuberculosis work. In 1918 the National Tuberculosis Association having been formed, the Red Cross handed over to it this very definite piece of health work. The efforts of the different agencies that are combating tuberculosis have been so successful that it is figured that there are living today about 125,000 persons, who would have been dead if the mortality rate of 1908 had remained unaltered.

Dr. Sumner H. Remick of the State Department of Public Health spoke of the part that summer camps take in making the child well and keeping him so, of the ten-year program of the state in the tuberculosis work and of the state facilities for caring for children with tuberculosis. In the examination of school children it has been shown that from eight to ten per cent. of them are in need of attention and the state has beds for about two per cent. There is here a very important field for the unofficial health agency. Dr. Remick emphasized the necessity for good follow-up work.

The chairman called on a number of those assembled, who spoke extemporaneously and briefly. These included Dr. Kroum Dokoff of Varna, Bulgaria, one of the Rockefeller Foundation students at the Harvard School of Public Health, who outlined tuberculosis conditions in

his native country. Dr. Dokoff has been secretary for an association there for five years. Dr. N. R. Pillsbury, superintendent of the Norfolk County Hospital, noted the close resemblances in the programs of his children's health camp and that at South Hanson; and Mr. John Ritchie of Malden, rated the summer camp as a stepping-stone to the preventorium and emphasized the necessity for a sound health education of the people, in order that they may appreciate the value of the various movements and be prepared to support them.

Dr. Bradford H. Peirce, superintendent of the Plymouth County Hospital, closed the meeting by exhibiting a movie film taken by him the past season, showing every phase of camp treatment.

MEETING OF THE ESSEX COUNTY HEALTH ASSOCIATION

TWENTY-EIGHT representatives from the towns and cities of Essex County were present at the Annual Seal Sale Meeting held at the Hotel Hawthorne in Salem. Those participating in the discussion were: Dr. Olin S. Pettingill, President of the Essex County Health Association; Mr. A. B. Peabody, Lynn Telegram News; Miss Helen Duhamel and Miss Grace N. Robinson of North Andover; Mrs. George Towne, President of the Danvers Visiting Nurses Association; Miss Marie Carney of the Salem Tribune; Mrs. G. S. Allen of Lawrence; Miss Margaret Weir and Miss Helen Wales of Beverly; Mr. Ralph Wheelwright of Danvers; Dr. William T. Hopkins, Lynn Board of Health; Dr. Walter G. Phippen and Mr. Josiah H. Gifford of Salem; Mrs. Mary F. Young of Danvers; Mrs. Ida Haman and Mrs. T. J. McAuliffe of Swampscott; Mrs. H. A. Thomas, Mrs. Edward Cole and Mrs. Marjorie Davis of Hamilton; Mrs. Frank T. Waters of Ipswich; Miss Amy B. Lindsay of Marblehead; Miss Edith Howe of Newburyport and Miss Cora L. Cooke, Field Secretary of the Essex County Health Association.

Dr. Pettingill spoke briefly and interestingly on the need of tuberculosis work in Essex County and Dr. Hopkins discussed tuberculosis conditions in general. He especially stressed the necessity of a high standard of milk, saying that it should be pasteurized and should come from tuberculin tested cows. Mr. Wheelwright talked about the need of more publicity in regard to the Christmas Seals. He stated that if the people knew more about them that they would be willing to give more money.

The program for 1928 was outlined for work in Essex County.

HARVARD MEDICAL SOCIETY

THE Harvard Medical Society held a meeting at the Peter Bent Brigham Hospital on November 8, 1927 at 8:15 o'clock. Dr. Hans Zinsser

presided. Two cases were presented and Dr. William E. Gye, pathologist of the Medical Research Council in London, spoke on the "Cancer Problem."

The first case was presented by Dr. Booth. The patient, a man of 44 years, came into the hospital complaining of hematemesis and difficulty in swallowing. Nine months ago he had an attack of nausea followed by vomiting two cupfuls of occult blood. On swallowing solid food, there was a slight pain in the region of the lower third of the sternum. From time to time since then he has had similar attacks with the persistence of the sternal pain.

On admission to the hospital he showed marked pallor and considerable emaciation, and had lost 50 pounds. The physical examination showed a negative neck and heart, with a prominent upper sternum. Posteriorly, there was some dullness between the angle of the right scapula and the spine and an area of marked dullness beneath the spine of the scapula on this side with numerous crackling râles. Clinical pathology was negative except for a white count of 12,000 and X-ray showed obstruction of the oesophagus.

Dr. Sosman discussed the three possibilities of obstruction. Aneurysm was ruled out because the edge of the mass in the X-ray picture was irregular which would indicate a rupture into the oesophagus, which is improbable. Primary carcinoma of the lung is probable because this condition frequently has a very indefinite edge. The most probable cause is a primary carcinoma of the oesophagus with perhaps a beginning fistula between the carcinoma and bronchus, this accounting for the reaction in the lung.

The second case was presented by Dr. Fetner. A Jewish tailor, 75 years old, came into the O. P. D. complaining of pain in the lumbar region. Nothing was found except an enlarged prostate. Subsequent X-rays showed destruction of the right pubic bone, and entire decalcification with trabeculation of the whole pelvis. Two local doctors had treated the patient for the pain. From a film of the chest a diagnosis of multiple myeloma was made. A plate of the skull showed marked destruction of the cranial vault. The Bence-Jones bodies, which are not always characteristic of multiple myeloma, were found in the urine. A diagnosis of metastatic carcinoma was made. The man failed rapidly, and died a month later. Necropsy showed multiple myeloma.

Dr. Gye pointed out that contrary to the general belief, we have at our disposal much knowledge concerning cancer, the first conception of the subject dating back to Hippocrates. Our present knowledge is due mainly to autopsies and microscopic studies. This study leads to the belief that the cell is the unit of growth and is spread by metastasis in the blood

stream from a primary focus. Numerous theories have been evolved to explain the phenomenon. Today there are two opposing views.

Research by some has brought out the following points: First, there is a specificity in tumors. They will grow only in specific varieties, i.e. transplants from tumors in man will not grow in animals. Second, there is a permanence of type in tumors. A growth does not change; for example, an epithelioma remains an epithelioma through many generations of transplants. Third, filtrates or dead cells produce no tumors. If cells are killed by maceration, heat or cold, and inoculated into either the morbid material or the filtrate no tumor will result. Fourth, tumors show a true transplantation, the daughter tumors entirely coming from the parent cells. From this we conclude that no parasite is the cause of tumors.

The other view with respect to the etiology of tumors is radically different. The first two premises referred to above were found to hold true. In the third case, however, filtrates were found to produce tumors, and dead cells, killed in the same way as before, also produced growths. In the fourth premise the inoculation of dead cells was found to produce a new tumor not growing from the inoculated cells, but from the cells of the host.

What are we to conclude from the two diametrically opposed experimental findings? Pathologists were inclined to be skeptical and infer that the results in the second case were not tumors.

However, both results were tumors and filtrates of these secondary tumors were specific. It seems improbable that each tumor can have a filterable virus causing its own special kind of growth. A study showed that only 50% of tumor filtrates are potent. This potency varies, depending somewhat on the pH, an acid medium of 6.5 being best. Poisons like HCN preserved the potency of a filtrate while antiseptics lowered it. One conclusion must not be disregarded, that perhaps the susceptibility of the host is necessary for the germ to become pathogenic.

After a study of the potency curves of filtrates under varied conditions and combinations, and after repeated experiments, Dr. Gye is led to conclude that the cause of cancer is a filterable virus.

MEETING OF THE LYNN MEDICAL FRATERNITY

The Lynn Medical Fraternity held its regular meeting and dinner at Hunt's Grill on Tuesday, November 1, 1927. The dinner was followed by a discussion of Ununited Fractures by Dr. P. N. Jepson of Boston, recently of the Mayo Clinic.

WILLIAM T. HOPKINS, Reporter.

REPORT OF THE MEETING OF THE WORCESTER DISTRICT MEDICAL SOCIETY

THE November meeting of the Worcester District Medical Society was held at Hahnemann Hospital on Wednesday evening, November 9th. Members of the Society were given an opportunity to inspect the Hospital from four to six in the afternoon.

At six o'clock an excellent dinner was served in the Nurses' dining room through the courtesy of the Trustees of the Hospital.

Following the dinner, President F. H. Washburn presided over a short business meeting.

The first speaker of the evening was Dr. Henry A. Christian of the Peter Bent Brigham Hospital at Boston. Dr. Christian's subject was "Myocarditis and Myocardial Fatigue." This talk proved very interesting especially Dr. Christian's concise explanation of the use of digitalis in myocarditis. Drs. Albee and Leib of Worcester discussed this paper.

Dr. John W. Keefe of Providence, R. I., read the second and concluding paper of the evening. Dr. Keefe was born and received his preliminary education in Worcester and we are always glad to have him home with us. Dr. Keefe spoke on "The Avoidance of Risks in Operation." He asked all surgeons to follow the "Golden Rule" in the treatment of their patients. He emphasized the value of personal contact with the patient preceding operation.

Drs. Fallon and Ljungberg discussed Dr. Keefe's paper.

Following this paper, Dr. Washburn introduced the President of the State Society, Dr. John M. Birnie of Springfield. Dr. Birnie outlined the program of the parent Society for the ensuing year. We enjoyed having Dr. Birnie with us and hope he will visit us frequently. The meeting was adjourned at nine o'clock following a standing vote of thanks to the Trustees and Staff of the Hahnemann Hospital for its splendid entertainment.

One hundred and thirty were present at the meeting.

ANNUAL MEETING OF THE COUNCIL OF THE INTERNATIONAL UNION AGAINST TUBERCULOSIS

The Executive Committee of the International Union Against Tuberculosis, consisting of Sir Robert Philip, Professor Archangelo Ilvento (representing Professor Paolucci), M. Andvord (representing Dr. Harbitz), Professor Calmette, Dr. Dewez, Professor Léon Bernard, Secretary General, Dr. F. Humbert, Associate Secretary General, and M. A. Pallain, Treasurer, held a meeting on September 27, at 2 Avenue Velasquez, Paris. On the next day, September 28, the Council of the International Union held its annual meeting. Ten countries had sent delegates to the meeting of Council: Austria, Belgium, France, Germany, Great Britain, Italy, Monaco, Norway, Poland and Switzerland. Two new countries, Finland and Bulgaria, had sent in their membership, so that the

International Union Against Tuberculosis now includes a total of 34 countries.

The meeting of the Executive Committee and the first meeting of the Council were chiefly devoted to the organization of the Sixth Conference of the International Union Against Tuberculosis to be held in Rome on September 25, 26 and 27, 1928.

The Italian delegate, Professor Archangelo Ilvento, submitted the proposals of the Italian Committee, which is making arrangements for numerous excursions and study trips by the delegates of the several countries, throughout the peninsula. Keen interest in this Conference is already evident. Canada has decided to send 30 delegates to Rome, who will make a preliminary tour of Europe.

As at previous Conferences, the scientific reports will be restricted to three questions. The Council has finally selected the three following subjects from a long list submitted by the several countries belonging to the Union:

I. Biological subject: Filterable elements of the tubercle virus.

II. Clinical subject: The diagnosis of infantile tuberculosis.

III. Social subject: The organization of tuberculosis prophylaxis in rural districts.

Arrangements are also being made for two or three Conferences on other special subjects.

The names of the persons who will be selected to report on these questions will be decided at the next meeting of the Executive Committee.

The second meeting of the Council was occupied by the reading and discussion of the Report of Dr. Dumarest, Chief Physician to the Belligneux and Mangini Sanatoria, at Hauteville (Ain), on "The results of Phrenicectomy in the treatment of pulmonary tuberculosis."

The speaker refuted the opinion that phrenicectomy is a local operation, with a selective action on lesions of the lower lobe; he demonstrated that the results of phrenicectomy are essentially dependent on the retractility of pathological tissues. Therefore lesions of the upper and middle lobe may derive as much benefit from this method as lower lobe lesions.

The author has recorded nearly 50 per cent. of unquestionably beneficial results obtained through phrenicectomy alone, a rate which corresponds with the proportion recorded by German authors. On the other hand phrenicectomy finds numerous indications as an adjunct to a pneumothorax or a thoracoplasty.

The author has come to the conclusion that the practice of this method, although it was often disappointing, occasionally yielded strikingly successful results, when performed under ideal conditions. In fact Dr. Dumarest only applies phrenicectomy to certain carefully selected cases; he does not agree with the extensive use of the method advocated, for instance, by Alexander and Götz.

The discussion, in which MM. Guido Mendes (Italy), Jaquero (Switzerland), Besançon, Courcoux, Léon Bernard and Vaucher (France) took part, threw fresh light on various aspects of the problem, particularly on the fact that phrenicectomy merely helps and promotes in the organism a natural defensive process which may occasionally occur spontaneously.

An account of proceedings of these meetings will be published in *extenso* in the next issue of the *Bulletin* of the International Union.

RECONSTRUCTION CLINIC

The regular clinical meeting of the Physical Therapy Department of the Reconstruction Clinic will be held on Friday, November 25, 1927.

Clinical cases will be demonstrated, as well as the application of physical therapeutic measures.

All physicians interested in this field of therapy are cordially invited to attend.

INTERNATIONAL HOSPITAL CONGRESS

This Congress will meet in the United States in June, 1929. It is expected that visits will be made to hospitals in New York, Philadelphia, Baltimore and Washington.

Why not Boston?

THE NORFOLK DISTRICT MEDICAL SOCIETY

A regular meeting of the Norfolk District Medical Society will be held in the Roxbury Masonic Temple, 171 Warren Street, Tuesday, November 29, at 8:15 p. m. Subject: The Diagnosis and Treatment of Infantile Paralysis.

The subject will be presented by speakers who are active in the work of the Harvard Infantile Paralysis Commission. Dr. W. L. Aycock or Dr. Eliot Luther will present the early diagnosis and the treatment during the acute stage, and Dr. Arthur T. Legg the treatment of paralyzed cases.

FRANK S. CRUICKSHANK, *Secretary.*

UNION HOSPITAL IN FALL RIVER

CLINICAL STAFF MEETING

The Regular Monthly Clinical Staff Meeting will be held at the Stevens Clinic on Thursday, December 1, 1927, at 8:15 P. M. Paper by Dr. Wm. Jason Mixer of Boston, Mass. Subject, "Surgical Diagnosis in Head Injuries." All physicians interested are cordially invited.

M. N. TENNIS, M.D., *Secretary to Staff.*

ATTENTION—DISTRICT REPORTERS

The JOURNAL wishes to thank the reporters from the various Districts for their cooperation in forwarding news items for publication in its columns.

Frequent reports from each of the eighteen Districts will make our meeting columns interesting for all members.

SOCIETY MEETINGS

November 25—Reconstruction Clinic. See page 1014 for complete notice.

December 1—Union Hospital in Fall River. See page 1015 for complete notice.

January, February, March and April, 1928—Last Saturday at 11 A. M. Cheever Amphitheatre, Staff Clinical Meetings at Boston City Hospital.

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

January 4, 1928 (Wednesday)—Semi-annual meeting at the Centre Church vestries, Main Street, Haverhill, at 12:30 P. M.

May 2, 1928 (Wednesday)—Annual meeting at 12:30 P. M.
May 3, 1928 (Thursday)—Censors meet for examination of candidates at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M. Candidates should apply to the Secretary, J. Forrest Burnham, M.D., 567 Haverhill Street, Lawrence, at least one week prior.

Essex South District Medical Society

December 7 (Wednesday)—Beverly Hospital. Clinic at 5 P. M. Dinner at 7 P. M.

Dr. P. E. Truesdale, Fall River, "Modern Trends of Medical Practice."
Discussion by Drs. P. P. Johnson and C. H. Phillips of Beverly, 10 minutes each, and from the floor.

January 4, 1928 (Wednesday)—Deer Cove Inn, Swampscott. Dinner at 7 P. M.

Dr. Frank Lahey, "Differential Points of Importance to the General Practitioner in Surgical Diagnosis."
Discussion by Drs. Walter Phippen of Salem and N. P. Breed of Lynn, 10 minutes each, and from the floor.

February 1 (Wednesday)—Council meeting, Boston.

February 8 (Wednesday)—Danvers State Hospital. Clinic at 4 P. M. Buffet supper at 6 P. M., followed by Dr. Abraham Myerson, "Some Aspects of Mental Hygiene."

Discussion by Drs. W. F. Wood of Hathorne and G. M. Kline of Beverly, 10 minutes each, and from the floor.

March 7 (Wednesday)—Lynn Hospital. Clinic at 5 P. M. Dinner at 7 P. M.

Dr. Henry R. Viets, "The Acute Infections of the Nervous System," with lantern slides and moving pictures.

Discussion by Drs. W. V. McDermott of Salem and J. W. Trask of Lynn, 10 minutes each, and from the floor.

April 11 (Wednesday)—Essex Sanatorium, Middleton. Clinic at 5 P. M. Dinner at 7 P. M.

Dr. Raymond S. Titus, "Obstetrical Emergencies."
Discussion by Drs. J. J. Egan of Gloucester and A. T. Hawes of Lynn, 10 minutes each, and from the floor.

May 3 (Thursday)—Censors meet at Salem Hospital for the examination of candidates at 3:30 P. M. Candidates should apply to the Secretary, Dr. R. E. Stone, Beverly, at least one week prior.

May 8 (Tuesday)—Annual meeting. Place and speaker to be announced.

Norfolk District Medical Society

November 29—Complete notice elsewhere on this page.

Suffolk District Medical Society

Combined meetings of the Suffolk District Medical Society and the Boston Medical Library will be held at the Boston Medical Library, 8 The Fenway, at 8:15 P. M., as follows:

December 28—Medical Section. "Functions and Organization of the Boston City Hospital."

January 25, 1928—General meeting in association with the Boston Medical Library.

Dr. George W. Crile, Lakeside Clinic, Cleveland, Ohio. Title to be announced later.

February 29—Surgical Section. Subject to be announced later.

March 28—Medical Section. "The Use and Misuse of vaccines." Dr. Hans Zinsser, Dr. Francis M. Rackemann, Dr. Charles H. Lawrence.

April 25—Annual meeting. Election of officers. Paper of the evening to be announced later.

The medical profession is cordially invited to attend these meetings.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

BOOK REVIEWS

Ker's Manual of Fevers. Revised by CLAUDE RUNDLE. Oxford University Press.

A 346 page book containing excellent brief descriptions of common fevers. Measles, rubella, smallpox, vaccinia, chickenpox, typhus fever, typhoid fever, diphtheria, erysipelas, pertussis, mumps and cerebro-spinal meningitis are considered, each in a separate chapter. The treatment of each subject is systematic, the paragraphs are captioned in bold faced type and there is an unusually good index, the result being a very handy reference book. Its conciseness and completeness, commend it to the reader who wants quick reference facilities.

Materia Medica and Prescription Writing. By OSCAR W. BETHEA. F. A. Davis Co.

This is the Fourth Edition of a well known book. The drugs are considered in alphabetic order and the information concerning each drug is stated very concisely. The origin, the different preparations, the use, therapeutic action, administration and toxic action of each drug is briefly stated. An excellent index greatly increases the value of the book. There is also an especially

useful "Clinical Index" which refers the reader to the different drugs used in the treatment of various diseases. Part II gives detailed instruction in the writing of prescriptions. Part III consists of illustrations of correct and incorrect prescriptions with brief marginal notes indicating the errors. The book contains many excellent tables of solubilities, weights and measures arranged in such manner that comparisons are very easy. The book is so well known that it speaks for itself. The Fourth Edition is even more excellent than its predecessors.

A Text-Book of Medicine. By American authors. Edited by RUSSELL L. CECIL. Published by W. B. Saunders Co.

Without doubt, this is the best textbook of medicine available today. The contributors number 130, each a recognized authority in his field. Each disease is concisely considered and the paragraphs are boldly headed so that quick reference is easy. An exceptionally excellent index occupies 100 pages. There are 1500 pages in the book but the Saunders Company have presented a handy desk volume. The brevity of this review is in inverse ratio to the appreciation of the medical profession to Dr. Cecil for making such a book available. The work involved was colossal but the result is a worthy successor to Osler's famous "Principles and Practice of Medicine."

Minor Surgery. By ARTHUR E. HERTZLER, Chief Surgeon, Halstead Hospital and VICTOR E. CHESKY, Chief Resident Surgeon, Halstead Hospital.

This little book is dedicated to the memory of Agnes H. Hertzler-Huerbert, Ophthalmologist to the Halstead Hospital and the preface states that it has been prepared with the idea of helping the dispensary student to understand what he sees in the out-patient clinic. "It is hoped that he may find it useful in his work as intern and as a source of occasional information in general practice.

Our impression, after a review of this book, is, that were it not for the rather unusually large number of decidedly good and useful illustrations, the work would fall far short of being of any great value.

The attempt is made to cover, altogether too briefly, a multitude of important subjects in a very brief and consequently inefficient way. Many things need enlarging upon and many useless descriptions use up space which might be given to greater advantage to more important things. For instance, in the chapter on surgical materials, there is a title, "Bandages," which reads as follows: "Bandages are materials used to retain dressings or any foreign body to the body or to compress certain parts. A variety of materials are used," and then "Gauze band-

dages may be purchased sterile or unsterile in various widths, or gauze may be procured in a yard roll and the bandages cut any desired width. Sterile bandages are practically never necessary." How much more of real value could have been given to the student by a real attempt at the description of cancer of the cervix, for instance, than that pathetic half page devoted to this most important subject and the entirely unnecessary description of bandages!

This type of criticism can be made throughout the whole book. Too much attention and space is given to trivial things and not anywhere near enough to some of the things the student really needs. If there were more descriptions like the illustration of the exact place to make the incision in peritonsillar abscess this book would be of far greater value. It will undoubtedly prove of a good deal of assistance to the man who studies the illustrations carefully.

BOOKS RECEIVED FOR REVIEW

A Textbook of Physiology. By William H. Howell. Philadelphia: W. B. Saunders Company. 1081 pages. Price, \$6.50.

Applied Bio-Chemistry. By Withrow Morse. Philadelphia: W. B. Saunders Company. 988 pages. Price, \$7.

Blood Pressure. By George William Norris, Henry Cuthbert Bazett and Thomas M. McMillan. Philadelphia: Lea & Febiger. 387 pages. Price, \$4.50.

A Treatise on Orthopedic Surgery. By Royal Whitman. Philadelphia: Lea & Febiger. 1061 pages. Price, \$9.

Surgery: Its Principles and Practice. By Astley Paston Cooper Ashhurst. Philadelphia: Lea & Febiger. 1179 pages. Price, \$10.

The Tongue and Its Diseases. By Duncan C. L. Fitzwilliams. New York: Oxford University Press. 505 pages. Price, \$11.

The Essentials of Otology. By George Birmingham McAuliffe. New York: Oxford University Press. 177 pages. Price, \$4.

Healthy Growth. By Alfred A. Mumford. New York: Oxford University Press. 348 pages. Price, \$5.

The Ear, Nose, and Throat in General Practice. By D. A. Crow. New York: Oxford University Press. 150 pages. Price, \$3.25.

Treatment of Venereal Disease in General Practice. By E. T. Burke. New York: Oxford University Press. 162 pages. Price, \$1.75.

The Diagnosis of Pancreatic Disease. By Robert Coope. New York: Oxford University Press. 112 pages. Price, \$1.50.

Everywoman A Nurse. By Edith Newsome. New York: Oxford University Press. 204 pages. Price, \$1.25.

Affections of the Stomach. By Burrill B. Crohn. Philadelphia: W. B. Saunders. 902 pages. Price, \$10.

The Ophthalmic Year Book. Vol. XXIII. Chicago: Ophthalmic Publishing Company. 338 pages.

Epidemic Encephalitis. By Leo M. Crafts. Boston: Richard G. Badger. 237 pages.

Practice of Urology and Syphilology. By Charles H. Chetwood. New York: William Wood & Co. 879 pages. Price, \$9.

Plastic Surgery of the Orbit. By J. Eastman Sheehan. New York: Macmillan Company. 348 pages.

Surgical Clinics of North America. August, 1927. Philadelphia: W. B. Saunders Company.